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Suman Verma · Anne C. Petersen *Editors*

Developmental Science and Sustainable Development Goals for Children and Youth

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Developmental Science and Sustainable Development Goals for Children and Youth

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Foreword

The classic definition of Sustainable Development, first advanced by the Brundtland Commission (1987), is "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs." What is true at the societal level is also true for each individual. Healthy human development means meeting the present needs of every child in a way that enables them to meet their needs in the future. This wonderful volume describes how a society should invest in the well-being of its children so that they grow up to be thriving, healthy, productive members of society.

Development at the societal and individual level share a vital characteristic: the need for key investments at the right time. Unless society invests now in climate change mitigation, we may well end up with runaway and irreversible global warming. Unless society invests now in protecting endangered species, we could cause the irreversible loss of biodiversity. And unless parents and communities invest in the health and education of children and youth at key junctures of life, their entire future life-course can be bleak.

As described in this volume, leading experts in human development – including psychologists, educators, medical doctors, neuroscientists, economists, social workers, and others -- have come to appreciate the importance of vital investments at the right time throughout the life course of each individual. Doctors know well that a mother's state of health and nutrition during pregnancy may well save or cost the mother's life and determine the long-term health of the child. The few critical moments around childbirth can mean the life or death of the mother and newborn. Pediatricians speak of the first 1,000 days of the child's life, from conception through the second birthday, as the vital period for the infant's survival and brain development. Each of these periods requires crucial investments – in health care, nutrition, safe environment, freedom from stress and violence, love of family – for a successful start in life with profound long-term consequences over the life course.

This volume emphasizes the years of Early Childhood Development (ECD), from roughly 2 years through 6 years (the start of primary education), as another special period of high-stakes investments in the child's well-being not only for the present but for the lifetime. In these early years, children's brains and bodies undergo dramatic changes, with long-term consequences for cognitive development, emotional well-being, motor control, and social adjustment. Early neglect can cause life-long disabilities; early investments in children pay off richly in their lifetime well-being.

Psychologists and neuroscientists have given special focus on the devastating consequences of chronic stress in children, which can result from poverty, deprivation, broken families, violence at home or in the neighborhood, environmental crises, and society-wide violence and war. Children facing persistently high level of stress will be vulnerable to life-long adverse consequences, not least through damage to brain development, including neural pathways critical for cognitive development, emotional regulation, pro-social behavior. Above all, young children need a safe, loving, nurturing, and stimulating environment, not only for their immediate safety but for their lifelong healthy development and well-being.

Recent evidence on the plasticity of the developing brain in adolescence suggests that opportunities for investment are critical for youth as well. Enriching their environments through supporting quality education, not just access, and opportunities for skill development and engagement in family and community settings can ensure that youth have the capacity to contribute meaningfully to sustainable societies.

This remarkable set of essays touches on many vital themes, including:

- The need for cultural sensitivity in designing and implementing programs and policies supporting children's development
- The importance of metrics of children's well-being along the life course
- The essential goals of equity and inclusion in child development programs
- The fostering of an "ecosystem" of developmental sciences, including neuroscience, psychology, social work, economics, public health, medicine, nutrition, sociology, and education and
- The formation of global partnerships for developmental science and implementation of developmentally informed programs from birth through adulthood

We see in this volume a model of intellectual responsibility. The "epistemic community" of developmental science is mobilizing itself globally to support the Sustainable Development Goals. Children around the world today and in the future will be the beneficiaries. The contributors to this volume will also inspire their counterparts in other fields to organize for sustainable development and the common good.

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Chapter 1
Developmental Science and Pathways to Sustainable Development for Children and Youth

Suman Verma and Anne C. Petersen

> We need to double the rate at which we are reducing maternal deaths. We need to bring quality education within the reach of all; if all children in low-income countries completed upper secondary school by 2030, per capita income would increase by 75% by 2050 and we could advance the fight to eliminate poverty by a full decade. Gender inequality is still deeply entrenched, and young people continue to face alarmingly high rates of unemployment, and their voices are yet to be sufficiently included in the deliberations affecting their lives and futures. António Guterres, Secretary-General, United Nations (2017, p.2)

In his foreword to the Sustainable Development Goals Report 2017, UN Secretary-General António Guterres highlights the collective need for reducing vulnerability, increasing resilience, leaving no one behind, and averting armed conflict by investing in sustainable and inclusive development. There is a special focus on children and young people to meet the implementation challenges of the 2030 Agenda along with the sustainable development goals (United Nations 2017).These sustainable development goals (SDGs) aim to provide a future for the young people that promises a healthy quality of life, avenues for lifelong learning and skill-developmental opportunities that ensure a life of dignity and justice. The goals are ambitious, dealing with large-scale global problems confronting mankind to provide a safe, healthier, and sustainable planet for the future generations to come. Many of these global challenges to development are especially salient for children and youth. Effective implementation of these goals requires a collective and concerted effort to build a culture of sustainability, draw knowledge from multiple disciplines, and implement evidenced-based programs and policies. We see the role of developmental science as crucial in this context.

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Developmental science has existed in some versions for almost a century, but only recently has this name been used to bring together research that began within many disciplines. At this point developmental science is a highly interdisciplinary field, including those parts of disciplines from biology to sociology and anthropology that seek to understand the course of human development over the life span. The model of development within embedded social and environmental systems was best articulated by Bronfenbrenner's bioecological framework (e.g., 1979).The bioecological model also enabled the conceptualization of effective programs and policy in the many contexts and cultures found globally. Developmental science is the term now adopted to encompass the resulting field, including its application to implementation science (Wuermli et al. 2015). More recently this framework has explicitly incorporated important research from biological sciences such as neuroscience as well as genetics and epigenetics integrated with more traditional research from behavioral and social sciences (e.g., Meaney 2010; Blakemore and Choudhury 2006). We now have a much clearer understanding of developmental processes in their entirety and are making rapid progress toward explicating development in various contexts and circumstances. Also included in this volume are several chapters on research methods commonly used in the developmental sciences for achievement of the SDGs. The chapters in this volume more strongly represent the behavioral and social sciences, but we will attempt to integrate into this chapter the more biological aspects of current developmental knowledge.

As with many fields of science, developmental science is most strongly practiced in the minority world, the few high-income countries where most of the research has been conducted. This situation is changing rapidly with China and India dramatically increasing the percentage of GDP invested in research (e.g., National Science Foundation Science Indicators 2018). Another novel feature of this volume is the focus on low- and middle-income countries. Not only do most chapters focus on the majority world, but almost all of the chapters include authors from the majority world among the distinguished developmental scientists who are authors.

All together we believe that we have, with this volume, contributed significantly to SDG implementation with the knowledge gathered here. Based on the progress achieved by the Millennium Development Goals, the SDGs may well effect significant improvement in the lives of children and youth globally. Our aim with this volume has been to increase the likelihood of such improvement by asking distinguished authors to consider how their developmental science research might be important for the success of the SDGs.

Aims, Approach, and Expectations for the Volume

Children and young people are the foundation of sustainable development. To a large extent, a nation's economic prosperity and progress depend on the greatest number of its children having access to educational, social, and economic opportunities in a wide range of developmental contexts (UNICEF 2013). Apart from their

rights to survival, protection, development, and participation, children have the right to *sustainable developmental alternatives* (Convention on the Rights of the Child, CRC 1989). They require an enabling environment to help them realize their potential and lead a life of dignity and respect. A wide range of risk factors prevents this, including maternal undernutrition, lack of exclusive breastfeeding, lack of access to clean water and sanitation, and lack of stimulation and learning opportunities. In many low- and middle-income countries (LMICs), these impediments lead to a loss of human potential (Black et al. 2017). Children living in conditions of risk at multiple levels of the social ecological model face high odds of early mortality, school failure, early pregnancy, joblessness, and chronic diseases throughout their lives (Shonkoff et al. 2012). Having a large number of children starting life at severe risk, therefore, threatens all other SDGs—thereby challenging global sustainable development efforts (United Nations 2015).

In September 2015, the United Nations agreed on a new global agenda to put the world on a more sustainable course. Building on the Millennium Development Goals (MDGs), the new 2030 Agenda is a plan of action that elaborates on the notion and need for enabling conditions, and it articulates 17 enabling SDGs with a shift in the economic and political relationships between high-, middle-, and low-income countries.

The 2030 Agenda calls for taking transformative steps needed to shift the world onto a sustainable and resilient path with a new cooperative paradigm based on the concept of "full global partnership" and the principle of "no one will be left behind." The 17 SDGs with 169 targets cover a wide range of topics, from social (health, poverty, education, migration, gender balance) to economic (production and consumption, jobs, energy, resilience) and from environmental (climate change, water, ecosystems) to rule of law and governance (accountable institutions, policy coordination, transparency, effectiveness, reducing corruption and violence). Human rights and gender equity are now mainstreamed in the Agenda (United Nations 2015).

The UN's 2030 Agenda and its SDGs represent a new long-term perspective on global development that addresses social inclusion, environmental sustainability, and good governance (Sachs 2015). Development Science can play a key role in supporting child and youth development in the context of the SDGs: (i) by generating scientific knowledge on the role of context in addressing inequity in human development; (ii) by creating appropriate measurement and monitoring systems that address inequity within and across populations; and (iii) by capacity building for measurement and monitoring through effective partnerships between and across countries, including universities, program evaluators, and policy makers (Raikes et al. 2017).

The SDGs pose a number of conceptual as well as implementation challenges that will require close collaboration between the policy and scientific communities and all other stakeholders. Global research initiatives pose challenges that can mobilize scientific teams to tackle these issues in partnership with policy makers. This cross-cultural and multidisciplinary volume highlights how contributions from developmental science on different aspects of sustainable development can inform

the discussion and implementation of the SDG framework with a focus on young people. The volume provides a human development perspective to realizing the success of SDGs to improve lives of children and youth globally.

Current demographic trends suggest that most of the world's children and young people live in LMICs, with particularly high population shares in sub-Saharan Africa. These countries already face serious structural challenges for achieving sustainable development outcomes, including high levels of deprivation in areas of child health, poverty, and education (United Nations 2017). Further climate change has increased the risk of exposure to multiple interacting risk factors for young people, especially in the LMICs, resulting in negative outcomes on health and development (Sanson et al., Chap. 6, this volume). While we discuss the SDGs from a global perspective, our focus is on the contextual and implementation issues related to SDGs in LMICs to share and disseminate work of local researchers and find workable solutions keeping the ground realities in mind.

This leads us to ask several questions: What evidence-based, data-driven, and context-specific solutions are needed to deal with constraints on positive child and youth development outcomes in particular contexts in LMICs? How can governments and other stakeholders—working in partnership with young people—promote a more enabling environment for children and youth development and their meaningful participation in the Agenda's implementation? What new research should developmental scientists consider for achieving the 2030 Agenda? What research will enable the action needed for the SDGs? These are some of the questions that contributors of this volume address in the context of the SDGs.

Therefore, this volume examines how life-course development illuminates opportunities and challenges in the SDGs and how that can help us understand the complex dynamics and interplay of human agency and the environmental constraints of social institutions. This book calls for a closer examination of the developmental pathways of risk and resilience, crucial transition points, and sustainable ecologically sensitive alternatives in achieving positive development of children and youth worldwide.

For the editors, our major purpose of this volume was to engage with scholars from multidisciplinary backgrounds and from LMICs to share their research relevant to SDGs. For some scholars, this exercise also generated interest in integrating SDGs in their research projects. As evident from the table of contents, several NGOs who are doing excellent work in integrating research and field impact were very enthusiastic in writing chapters. Above all, the careful critiques and cross-stimulation of ideas of our enthusiastic reviewers were very productive and helped integrate multiple perspectives in the chapters. This volume has already stimulated the field of developmental science to focus on the opportunities of the SDGs in improving child and youth development and will help establish stronger links between the SDGs and developmental science.

In this introductory chapter, we begin with briefly examining (i) the dynamic interplay between the realization of children's rights and well-being and the sustainable development framework; (ii) SDGs and the 2030 global framework for policy making and action; (iii) a review of progress toward achieving the SDGs; (iv)

developmental science, policy change, and societal progress; (iv) organization and overview of the volume with key emerging themes; (v) what's missing from this volume; and (vi) the overall impact of the volume and developmental science research.

Definition, Concept, and Framework of Sustainable Development

Sustainable development—the core concept for the 2030 Agenda—provides an integrated response to the complex environmental, societal, economic, and governmental challenges that directly and disproportionately affect children and youth (UNICEF 2013). A widely accepted definition of sustainable development comes from the 1987 landmark report of the Brundtland Commission,*Our Common Future*:

> Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. (World Commission on Environment and Development 1987, p.43)

By meeting social and economic needs within natural resource limits, human development is both sustained and is sustaining of the system. This implies the continued advance of poverty eradication, human rights, and equity while also realizing more sustainable patterns of consumption and production, stabilizing climatic forces, and sustainable managing our common natural resource base. A greater focus on the developmental needs, capabilities, and rights of children and young people is crucial to making sustainable development choices that represent an investment in everyone's future (UNICEF 2013).

As shown in Fig. 1.1, sustainable development involves progress both within and across four integrally connected dimensions, namely, inclusive social development, inclusive economic development, environmental sustainability, and the rule of law. Each of these dimensions has specific influences and major impacts on children and young people. At the same time, children and young people are central to the progress and contributions of each of these four dimensions (UNICEF 2013). Further, sustainable human progress will also be determined by the degree to which the principles of human rights (including child rights), equity, and sustainability are upheld throughout all these efforts. Alternatively, without sustainable development that sets goals and pursues targets with children's needs, rights, and best interests in mind, development progress is likely to be inequitable and slowed for everyone, thus negatively impacting both children and societies (United Nations 2012).

Rio +20—the short name for the UN conference on Sustainable Development held in Rio de Janeiro, Brazil, in June 2012—was a historic opportunity to define pathways to a more equitable, cleaner, greener, safe, and more prosperous world for all. Twenty years after the 1992 Earth Summit in Rio, the UN brought again governments, international institutions, and major groups together to agree on a range of

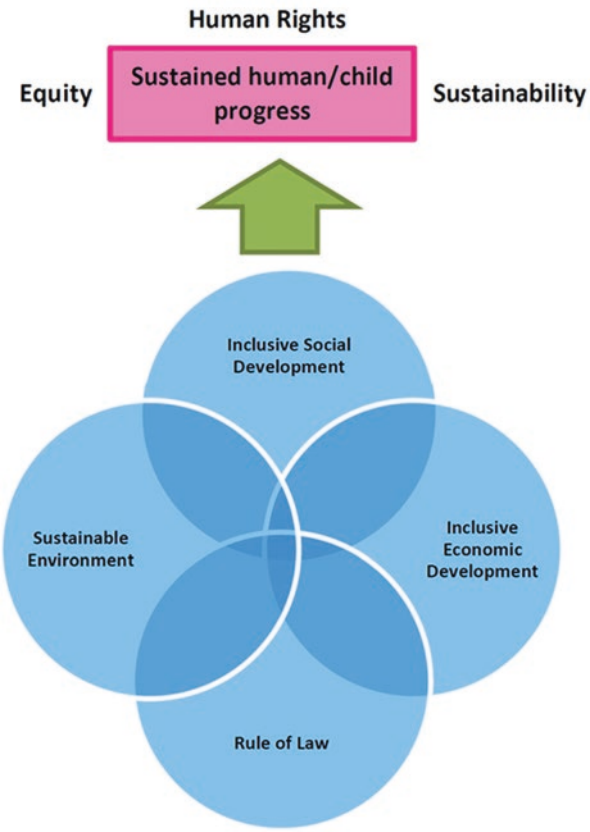

Fig. 1.1 Sustainable development framework. (Source: UNICEF 2013)

measures that can reduce poverty while promoting decent jobs, clean energy, and a more sustainable and fair use of resources. The UN Resolution on the outcomes of Rio + 20, *The Futures We Want*, reiterates the need for promoting intergenerational solidarity for the achievement of sustainable development, taking into account the needs of future generations (United Nations 2012). This involves fulfilling the collective commitment to the present as well as the future generations.

Child protection and child participation as part of a sustainable future are guided by an extensive range of international conventions, treaties, and other legal instruments—many with direct linkages to the Convention on the Rights of the Child (CRC 1989). Multilateral environmental agreements such as the Basel Rotterdam and Stockholm Conventions (United Nations Institute for Training and Research 2017) have been adopted to ensure a healthy environment and significantly protect children from exposure to chemicals and waste. The three Rio + 20 Conventions—on biodiversity, climate change, and desertification—are foundations of sustainable development. Several other proposals have been reaffirmed in UN General Assembly resolutions, such as *The Future We Want, The Human Right to Water and Sanitation,* and a *World Fit for Children*. These child-centerd sustainable development policies

already exist in close alignment with the CRC (UNICEF 2013). As evident from the latest UNICEF SDG tracking series (UNICEF 2018), the main challenge for the world today is the effective implementation and monitoring of these sustainable policies.

Sustainable Development Goals and the 2030 Global Framework for Policy Making and Action

The 2030 framework recognizes that attaining human well-being in the long term is dependent on a development context where resources and capital (both manmade and natural) are safeguarded and global public goods (including environmental ones) need to be resolved. The framework endorses to intensify the fight against extreme poverty and the need for a set of goals to pursue a focused action (Sachs 2015) while also focusing on building individual capabilities, expanding natural opportunities, and managing global risks (Sen 1999; Nilsson et al. 2013).

The 2030 Agenda and its SDGs represent a new long-term perspective on global development that must be embedded in the decision-making of governments, businesses, and people. Science, technology, and innovation are fundamental ingredients of such a shift, as they allow improving efficiency in both economic and environmental senses, developing new and more sustainable ways to satisfy human needs, overcoming historical divides, and empowering people to drive their own future. The 17 SDGs constitute a holistic, integrated, and universal vision for a sustainable future (United Nations 2015). Young people played a key part in shaping the Agenda's priorities, and, now as agents of change, they will be indispensable to its achievement in the coming 15 years. The final 17 SDGs adopted by world leaders at the UN General Assembly in September 2015 are given in Fig. 1.2.

The global indicator framework was developed by the Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGS) and agreed upon at the 48th session of the United Nations Statistical Commission held in March 2017. The global indicator framework was adopted by the General Assembly on July 6, 2017, and is contained in the Resolution on Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development (A/RES/71/313). The list includes 232 indicators with 9 indicators repeating under different targets (https://unstats.un.org/sdgs/indicators/indicators-list/). See Appendix of this volume for the final list of proposed targets and indicators under each SDG.

The interlinkages and integrated nature of SDGs are of crucial importance in ensuring that the purpose of the 2030 Agenda is realized. For instance, the SDGs address all major health priorities and recognize that opportunities to improve health can be found not only in health interventions (SDG3) but also through education and social justice (SDGs 4,5,10, 16, & 17), environmental protection (SDGs 2,6,7,11–15), and shared prosperity (SDGs 1,8,9). These three pillars of sustainable development are seen as integrated and indivisible (Dye and Acharya 2017). The

Fig. 1.2 Sustainable development goals in the 2030 Agenda

SDGs have stimulated the need to find sustainable solutions to deal with the challenges to providing universal health coverage to all sections of the society.

Educational opportunity and achievement are crucial drivers for promising social progress for children and youth (Spiel et al. 2018). SDG 4 says, "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all." This has drawn the interest of many developmental scientists, and much work is already ongoing. Most chapters in this volume refer to the educational goal, and, therefore, this SDG warrants some elaboration.

As a global education agenda, SDG 4 differs from both the education-related MDGs and from *Education for All* (EFA) in scope, geographical coverage, and policy focus. While MDG 2 focused on children and access to primary education, EFA had a broader agenda aimed at "meeting the basic learning needs of children, youth, and adults." The SDG 4 agenda is "to ensure equal opportunity in access to quality learning opportunities at all levels of education in a lifelong perspective" (United Nations 2015). The geographical coverage of MDGs focused on low-income and conflict-affected countries. In practice, EFA became focused on countries where the proportion of out-of-school children was the greatest.

SDG 4 is by definition a universal agenda applicable to all countries. From the narrower MDG focus on access to—and completion of—primary education, EFA was concerned with access to quality basic education for all children, youth, and adults. This included early childhood care and education, primary and secondary education, as well as youth and adult literacy and life skills. The SDG 4 continues the EFA's focus on quality education for all and broadens the agenda further to include concern for equitable access to post-basic education and training for youth and adults with appropriate learning opportunities. What is also new in the SDG 4 is the focus on a holistic and lifelong and life-wide learning perspective and the relevance of learning outcomes both for the world of work and for citizenship in a global and interconnected world (UNESCO 2017).

Additionally, SDG 4 includes a renewed and broader focus on inclusion, equity, and gender equality. (Target 4.5 aims to eliminate gender disparities and ensure more equitable access to all level of education and vocational training for vulnerable populations including persons with disabilities and indigenous peoples.) There is also a focus on *effective learning* and the acquisition of relevant knowledge, skills, and competencies (Target 4.1), as well as for youth and adult literacy (Target 4.6). It is vital to give a central place to strengthening education's contribution to the fulfilment of human rights, peace and responsible citizenship from local to global levels, as well as gender equality, sustainable development, and health (UNESCO 2017).

A Review of Progress Toward Achieving SDGs

Investing in children and young people is at the core of the 2030 Agenda and the SDGs. *Progress for Every Child in the SDG Era*, the first thematic report of UNICEF's new SDG-tracking series, provides a preliminary assessment of how the world is doing thus far on achieving these critical targets (UNICEF 2018). As revealed in this report, more than half a billion children live in countries unable to measure progress toward achieving the SDGs. Where sufficient data is available, the scale of the challenge posed by the SDG targets remains daunting. The report warns that 650 million children live in countries where at least two-thirds of the SDGs are out of reach without accelerated progress. More than half of the world's children live in countries where we either cannot track their SDG progress or where we can; they are grossly off-track. The report identifies three principles for moving forward: (i) improve the quality, coverage, and coordination of data systems, (ii) ensure all countries have minimum data coverage for children, and (iii) develop international norms and standards for data collection and analysis (UNICEF 2018).

The 2017 SDG Report (United Nations 2017) reviews progress made toward the 17 goals in the second year of implementation of the 2030 Agenda for Sustainable Development. The report is based on the latest available data and highlights both gains and challenges as the international community moves toward full realization of the ambitions and principles espoused in the 2030 Agenda. Summarized below are some of the significant findings of the report related to children and youth across various dimensions of sustainable development.

The 2017 SDG report points that vulnerability was much higher for younger workers: 9% of adult workers and their families lived in extreme poverty, as compared to 15% of youth workers. In 2016, 35% of children were covered by social protection; and 41% of women giving birth received maternity benefits. The global maternal mortality ratio fell by 37%, and the less-than-5 mortality rate fell by 44% from 2000 to 2015. However, 5.9 million children under age 5 died worldwide in 2015, mostly due to preventable causes.

In 2016, an estimated 155 million children under age 5 were stunted (low height for their age), 52 million were suffering from wasting (low weight for their height), and 41 million were overweight (compared to 30 million in 2000). Globally, overweight in children increased, and the stunting rate fell from 33% in 2000 to 23% in 2016.

Despite considerable gains in primary school enrolment between 2000 and 2014, the proportion of primary school age children out of school has stagnated at 9% since 2008. Stark inequities persist, with survey undertaken between 2007 and 2015 in selected countries show that children and adolescents from the richest 20% of households achieved greater proficiency in reading than those from the poorest 20% of households, and urban children scored higher in reading than rural children. In 2011, only one quarter of schools in sub-Saharan Africa had electricity, less than half had access to drinking water, and only 69% had toilets.

According to surveys undertaken between 2005 and 2016 in 87 countries, 1 in 5 partnered girls and women (aged 15 to 49) were subjected to physical and/or sexual violence by an intimate partner in the previous 12 months. There was a decline in prevalence of early marriage with nearly one in three women between 20 and 24 years reported being married before age 18 in 2000 to one in four in 2015. Close to 35% girls (15–19 years) were subjected to genital mutilation in 30 countries where this practice still continues. Globally, childbearing among adolescents declined by 21% between 2000 and 2015 (United Nations 2017).

The global unemployment rate fell from 6.1% in 2010 to 5.7% in 2016. Youth aged 15 to 24 years were nearly three times more likely than adults to be without a job, with unemployment rates of 12.8% and 4.4%, respectively. The number of children aged 5 to 17 engaged in child labor declined from 246 million in 2000 to 168 million in 2012. Yet, around one in ten children worldwide were engaged in child labor in 2012; more than half of them (85 million) were exposed to hazardous forms of work.

Progress in promoting peaceful and inclusive societies remains uneven across and within countries. In 76 countries with available data from 2005 to 2016, about 8 in 10 children aged 1 to 14 years were subjected to some form of psychological aggression and/or physical punishment on a regular basis (United Nations 2017). More than 570 different human trafficking flows, across the globe, were identified by law enforcement officers between 2012 and 2014. The large majority of identified trafficking victims in 2014 were women and girls (71%), with more than a quarter being children.

As evident from the demographic trends, progress has not always been equitable. Advancements have been uneven across regions, gender, different age groups, and locales. Lack of disaggregated data exacerbates vulnerabilities by masking the extent of deprivation and disparities among groups such as children, youth, and persons with disabilities (United Nations 2017). Faster and more inclusive progress is needed to accomplish the bold vision articulated in the 2030 Agenda.

How Developmental Science Contributes to Policy Change and Societal Progress?

The Rio + 20 outcomes, the High-Level Political Forum (HLPF), and the 2030 Agenda reinforce and emphasize the significance of promoting and implementing a science policy interface (United Nations 2016). Developmental science plays an important role for sustainable development—from informing the formulation of evidence-based targets and indicators to assessing progress, testing solutions, and identifying emerging risks and opportunities.

The 2030 Agenda provides an opportunity for developmental scientists in the policy framework to provide the necessary evidence-based innovative and creative inputs and thus engage in global sustainability processes. For instance, developmental

scientists can be at the forefront of designing, implementing, and evaluating new approaches to preventing and responding to abuse and violence against children (Abubakar et al., Chap. 10, this volume; Alampay et al., Chap. 15, this volume; Sittichai et al., Chap. 12, this volume). Prevalence estimates are needed to understand the magnitude of the problem along with information on the family and the social environment and social norms, attitudes, and beliefs to understand factors that may increase or mitigate risk (International Council for Science & International Social Science Council 2015). Additionally, developmental scientists can also provide evidence on effective preventive interventions targeting the many individual and social factors that leave children and youth vulnerable to violence as well as effective programs for individuals and societies who have been harmed.

Developmental science is a multidisciplinary field that has played a central role in understanding the complex nature of human development. Developmentalists use varied developmental systems models and employ a wide range of methods and tools for comparisons across sociocultural contexts to provide insights into developmental pathways, individual differences, prevention, and interventions. This scientific knowledge comes from many sources that can be crucial in our understanding of global problems affecting the well-being of young people (Gauvin 2018) and in contributing to the effective implementation of SDGs in different country contexts. By integrating solution-oriented research needs relevant to the realization of SDGs in their research agenda, development scientists will not only contribute but also benefit from the enhanced knowledge base generated by making useful contributions to the complex and multidimensional agendas and improved developmental science-policy interface.

For the effective realization of the SDGs, developmental science can contribute by generating empirical data on measurement and outcome indicators of well-being among children and youth, with a special focus on the excluded groups (Serpell, Chap. 21, this volume). Globally, excluded children and youth have less access to quality health and education services, water, sanitation, and electricity (Tchombe et al., Chap. 7, this volume); they are more likely to experience violence and crime; those in unstable or at-risk households are more likely to lose parental care and end up living in alternative settings (Koller et al., Chap. 8, this volume). Other challenges for excluded children include birth registration, stunting, infant mortality, and access to quality care, education, and protection (Abubakar et al., Chap. 10, this volume).

The furthest-behind children and youth face stigmatization, discriminatory laws and policies, and unfair cultural practices and social norms. They are persecuted because of their beliefs or identities (Dimitrova et al., Chap.9, this volume), are administratively invisible or unregistered, and are adversely affected by disasters related to climate change (Sanson et al., Chap. 6, this volume) and large population movements due to conflict. As such, they may face long-term psychological damage (United Nations 2016). The fields of developmental psychopathology and preventive science, both part of development science, are underutilized in the global literature because they are new fields in the LMICs. Emerging evidence from these two fields has much to contribute in identifying pathways of prevention and intervention

(Schindler and Yoshikawa 2012). By providing necessary scientific input, the developmental scientist's contribution can be of much value in developing holistic, age-sensitive measures (Dowd et al., Chap. 20, this volume; Wuermli et al., Chap. 16, this volume) and locally grounded, evidence-based programs for young children (Motta and Yoshikawa, Chap. 3, this volume). Furthermore, children's rights and special needs must be carefully integrated in the identification, design, and implementation of national policies to achieve the SDGs (Serpell, Chap. 21, this volume). The indicators and reporting mechanisms must track progress over time and identify gaps when reporting at the national level (Banati, Chap. 17, this volume).

The 2030 Agenda recognizes children and youth as agents of change; accountability is at the core of this narrative. However, to enable children and youth to be engaged in public and social accountability, the SDG mechanisms must be child and youth sensitive (Koller et al., Chap. 8, this volume), and public officials must respectfully listen and respond to young people. A critical role in accountability that developmental scientists could play is that of evaluating the impact of implementation of services. Further, as implementation of the SDGs takes place at national and local levels, the primary focus of accountability must be directed there by equipping inhabitants, including children and youth, and governments to work constructively together to achieve sustainable outcomes by assessing how well states are fulfilling their responsibilities.

There is also the need for the promotion of innovations in technology that support participatory monitoring and accountability, through strategies such as enabling children and youth to collect data and collaborate actively in the process (UNESCO 2017). When children and youth help determine what data are collected and are enabled to collect data themselves, the resulting information is typically more reflective of local contexts. In the process, children and youth learn to interpret data and use it to inform action and political engagement.

Despite the great benefits that child participation can bring to decision-making and monitoring processes, children are often excluded (UNICEF 2015). Developmental scientists can help develop child-friendly materials and adapt those processes needed to create spaces for children to participate in achieving these goals. This collaborative action can enhance the developmental science-policy-societal progress interface that is crucial to drive more empirically based, data-informed decision-making for policy design, implementation, monitoring, follow-up, and people-friendly review.

Organization and Overview

This volume comprises four sections with 24 chapters. Each chapter focuses on one or more SDGs, given the focus related to children and youth development. Contributors were invited to share their research and review and highlight issues related to sustainable development among young people; they were also encouraged to report on the situations in their respective countries and regions. They were

requested to address issues related to the SDG conceptual framework, as well as implementation challenges. Further interest was on the gaps in our understanding of sustainable child and youth development, its interlinkages and interdependencies with social systems that can support integrated policy planning, and on examining how we can provide learning opportunities and avenues for the participation of young people in local action and wider decision-making for sustainable societies. Most authors have reflected on the way forward and how we, as developmental scientists, can consider the 2030 Agenda for new research and integrate the SDGs into research agendas at all levels.

The chapters were thematically grouped together under four sections. The first section is on early childhood development and the significance of investing in these foundation years for sustainable development. The second section focuses on children and youth from multiple perspectives on lifelong learning, health, well-being, protection, and abuse while also addressing challenges in realizing the SDGs that cover each of these crucial aspects. Contributors in the third section raise crucial issues related to measurement and monitoring of development and well-being indicators in the SDGs and suggest measures to deal with such challenges. The fourth section on policy and systemic change highlights the role of effective professional networks, multi-stakeholder partnerships, and capacity-building needs for implementation of SDGs, with a special focus on LMICs. The following overview of the chapters proceeds in the same format with key emerging themes given in the end of each section.

Early Childhood Development: A Domain of Global Importance

Recent advances in neuroscience, child development, and economics have provided evidence of the foundational importance of the early childhood period. Significant brain development, socio-emotional development, and nutritional status all have their foundations laid during this period. In environments characterized by toxic stress, interventions to protect, promote, and support child development have the potential to generate a massive dividend (Shonkoff et al. 2012). There is ample evidence that such early interventions are cost-effective (Heckman 2006) and lead to improvements in adult economic productivity (Campbell et al. 2014). Studies have shown an increase of 25% in adulthood earnings for those who received an early stimulation and nutrition intervention (Gertler et al. 2014).

The launch of the SDGs has provided a new impetus to the early child development target (Target 4.2: *by 2030 ensure that all girls and boys have access to quality early childhood development*) (United Nations 2015). Not only Target 4.2 but all 17 SDGs are in one way or another related to early child development (ECD). They provide a roadmap for countries to develop comprehensive national plans with effective interventions that optimize ECD, within the health sector and in other sectors that address critical determinants of health (Bustreo 2016).

Dogra and Kaul (Chap. 2, this volume) examine some of the challenges and potentialities for the ECD Target 4.2 with particular reference to the South Asian region. While reviewing the status of ECD in this region, the authors examine the various institutional mechanisms needed for the effective assessment and monitoring of the quality of the ECD Target 4.2 and identify related opportunities and challenges.

Culture plays a crucial role in enabling sustainable child development. The UN Inter-Agency projects—implemented under the MDG-F Achievement Funds—have demonstrated the power of culture to respond to gender issues, to health and environment concerns, and to challenges in the areas of education and livelihoods. These projects have further generated new jobs, new market opportunities, and greater income levels, and they have improved the living conditions and fostered community-based economic growth along with empowering individuals. Thus, culture-sensitive approaches have demonstrated how one can address both the economic and human rights dimensions of poverty at the same time while providing solutions to complex development issues in an innovative and multi-sectoral manner (UNESCO 2012). Motta and Yoshikawa (Chap. 3, this volume) share one such initiative by elaborating on the cultural context of the National ECD Policy of Colombia that has developed a mechanism for implementation specific to ethnic-minority, rural, and indigenous populations in the country. They examine the *Modalidad Propia* as a scalable program to ensure access and quality resources for ECD (SDG Target 4.2) and to explain how policies need to take into account the contexts of the cultural nature of human development as well as regional livelihood dynamics in order to define how services can be structured and delivered to children and their families.

Prolonged conflict and violence prevalence result in fragile communities. For instance, the Syrian crisis—and the related refugee influx into many European Union countries—presents urgent challenges for the survival of children, women, and young people across areas of health, education, nutrition, social protection, and other service domains. In resilience research, studies of protective strategies for children and youth are advancing, with further insights needed on how different types of disasters affect children and families; how disasters affect children of different ages, cultures, and contexts; and how exposure to disasters affects developmental pathways (Verma and Cooper 2017). Discussion on the link among ECD, peace, and citizenship has gathered momentum recently. Arguing that the science of ECD could be a transformative solution and accelerator of peace, Ponguta et al. (Chap. 4, this volume) link ECD programs to larger issues of social transformation, conflict, and peace in the context of many SDGs. They convincingly present evidence on how the ECD programs that engage caregivers and children can be leveraged to contribute to peacebuilding efforts to promote social cohesion, individual and community resilience, and economic productivity, thus contributing to preventing violence and promoting peace. They further utilize this evidence to build a theory of change to guide research, program, and policy, with the purpose of leveraging ECD programs for peacebuilding and sustainable development.

Nurturing care in the home, with caregivers who are sensitive and responsive to children's needs, is essential. Black and Merseth (Chap. 5, this volume) demonstrate how a Nurturing Care Framework that supports families and enables young children to reach their developmental potential can be implemented during the first 1000 days with application during preschool and early childhood stages—and ultimately through middle childhood and adolescence. The authors examine how theories from developmental science establish a basis for achieving the SDGs, address how the timing of early experiences relate to early child development, and review how the Nurturing Care Framework promotes ECD and strengthens countries' capacity to meet the SDGs and present the implementation of the framework as a multi-sectoral process.

While the scientific evidence is clear, the donor and policy neglect of ECD has been striking. The reasons include variation in terminology and framing of ECD policies and requirement of support from multiple stakeholders across sectors (health, education, social protection) in ECD programs (Bustreo 2016). All chapters in this section reiterate that ECD is essential for attaining multiple SDGs, and unless ECD is prioritized, so as to inform policy and programmatic implementation, it is unlikely that many of the SDG targets will be reached.

Key Emerging Theme: Early Intervention Matters

All chapters in this volume on early childhood development endorse that the success of the SDGs depends on ensuring that young children throughout the world reach their developmental potential, thereby building the capacity for future generations of adults to have the health, intelligence, creativity, and humanitarianism to move the global agenda forward (Black and Merseth, Chap. 5, this volume). Investing in quality ECD programs to drive peace, conflict prevention, social transformation, and social cohesion is crucial in situations of acute distress as well as in settings where chronic risk factors are prevalent (Ponguta et al., Chap. 4, this volume). Young children require Nurturing Care, an enabling environment that supports families and is based on sustainable systems of accountability (Black and Merseth, Chap. 5, this volume). Programs that infuse local culture into early childhood education programming, with much stakeholder input that facilitates dialogue within and between communities and the national design of services, staffing, quality definitions, and governance, are more effective to meet SDG Goal 4 on inclusive education (Motta and Yoshikawa, Chap. 3, this volume). Participation in quality ECD programs leads to lifelong learning (Dogra and Kaul, Chap. 2, this volume) and productivity for participants from vulnerable groups and results in high societal returns on investment, which provides strong evidence that ECD investments can also contribute to SDG 10 (reduction of inequalities) and SDG 8 (economic growth) (Ponguta et al., Chap. 4, this volume). Using evidence from biodevelopmental, social, and macroeconomic perspectives, Ponguta et al. (Chap. 4, this volume) make the case for multi-sectoral and interdisciplinary partnerships in research, practice, and policy to leverage investments in ECD as a key approach to achieve sustainable

development. They include a theory of change for peacebuilding through ECD and identify knowledge gaps where interdisciplinary research is needed. Authors also reiterate the need to acknowledge dilemmas related to cultural and contextual variations and the need to come up with country-specific assessment tools and methodologies that would allow for global monitoring and yet be relevant at decentralized levels as per social and cultural specifications (Dogra and Kaul, Chap. 2, this volume; Dowd et al., Chap. 20, this volume; Wuermli et al., Chap. 16, this volume). Therefore, regional collaborations in related ventures may be the way forward.

Lifelong Learning, Health, and Well–Being Among Children and Youth: Multiple Perspectives on Challenges to Sustainable Development

Investing in people through education and healthcare, social protection interventions, technologies, infrastructure, and natural capital is at the very heart of achieving the SDGs (Sachs 2015). This section includes chapters on varied themes concerning young people from LMICs such as climate change, childhood poverty, education, health, marginalization, inequity, gender, child marriage, child protection, abuse, violence and bullying, skill development, and preventive interventions. The chapters cover a wide range of SDGs, and, in many, there are several overlaps in the global goals, thus reiterating that sustainable development challenges are integrated and need to be addressed in a holistic manner.

Climate change and natural disasters have a disproportionate impact on today's children, especially the most disadvantaged children. Sanson and colleagues (Chap. 6, this volume) summarize the climate science and how its impacts will be felt by children in LMICs. A bioecological system framework is used to show how a changing climate will increase children's exposure to cumulative risk factors while also reducing their exposure to protective influences, resulting in negative developmental outcomes. They further highlight the role of developmental science in offering models and interventions for resilience building and helping young people to manage negative emotions surrounding climate change and develop protective skills and attributes that will mitigate the deleterious effects of climate change and help achieve SDG 13.

As evident from the SDG 2017 report (United Nations 2017) and the latest UNICEF SDG Era report (UNICEF 2018), high prevalence of childhood poverty persists. Poverty in childhood is related to adverse developmental outcomes and is often the root cause of deprivation in adulthood. Similar dimensions of deprivation are explored by Tchombe et al. (Chap. 7, this volume) of young people from Cameroon. They address culturally relevant support services and the challenges faced by the government in the implementation of the SDGs related to health and education; they also highlight mutual reciprocity as a strategy for helping children

cope in difficult situations. Extending this discussion to Mozambique, Koller et al. (Chap. 8, this volume) also highlight the unique challenges faced by youth in different developmental domains in the country in its pursuit of the African Union's Agenda 2063, which is integral to the 2030 Agenda. The authors examine areas of risk and vulnerability exposure among youth and suggest measures for promoting positive youth development in the context of the SDGs.

Moving to Europe, Dimitrova et al. (Chap. 9, this volume) focus on SDG 3 (good health and well-being), SDG 4 (quality education), and SDG 10 (reduced inequalities), and they refer to the key pillars for improving social inclusion of vulnerable youth from the Roma community in six European countries. Taking a positive youth development approach and mutual intercultural relations perspective, they examine developmental assets (ethnic and national identities), optimal outcomes (self-esteem), and their relations with implications of contextual conditions on these processes among Roma youth across countries.

Using the bioecological model of human development and the bottom-up approach in health promotion program development, Abubakar et al. (Chap. 10, this volume) demonstrate the efficacy of community dialogues as a participatory research and program development strategy through which developmental scientists and local community partners can address and evaluate child protection and well-being issues in their communities. Using a case study from Shinyanga, Tanzania, they document daily life spaces in which children spend their time and factors in each of these spaces that harm or support child safety, health, and well-being. Issues of discrimination and stigmatization among children with disabilities, gender bias, and sexual exploitation emerged as serious threats to child health and well-being among children, especially for girls.

The demographic dividend of large youth population in LMICs has proved challenging, given the high rates of unemployment. D'Sa, Scales, and Gebru (Chap. 11, this volume) focus on SDGs 4 and 8, which relate to youth workforce readiness, technical and vocational skills training, and access to decent work. Using a case study from a youth-work readiness program in LMICs, they argue that interventions must address transferable skills: nontechnical skills that are important across domains of a youth's life and can be learned in and transferred across developmental domains. Drawing from developmental psychology, they offer a life-wide learning approach that focuses on the ecological settings around youth, supporting youth to build skills across domains, and an assets-based approach to work readiness development.

The State of the World's Children 2017 report examines the ways in which digital technology has affected children's lives and life chances. If universally accessible, it can prove beneficial for children being left behind—whether because of poverty, race, ethnicity, gender, disability, displacement, or geographic isolation—connecting them to a world of opportunity and providing them with the skills and knowledge they need to succeed in a digital world. On the other hand, digital technology may create new divides that prevent children from fulfilling their potential. Online risks may make vulnerable children more susceptible to exploitation, abuse, and even trafficking—as well as more subtle threats to their well-being (UNICEF 2017). Sittichai et al. (Chap. 12, this volume) trace the connections between

sustainable development, bullying, and cyberbullying, using Thailand as a case example. They provide evidence of the connection between bullying, academic performance, and mental health. Focusing on data from Thailand, they explain how bullying impedes the achievement of some SDGs and how the successful achievement of other SDGs could reduce bullying-related harm.

Another girl-child protection issue relates to child marriage that still continues unabated (as evident from the latest SDG report of UNICEF 2018). Perez-Amador and Giorguli (Chap. 13, this volume) report the high incidence of child marriages in Mexican girls, both from the rural and urban areas. They demonstrate how, during the transition to adulthood, early marriage is related to early departure from formal education and teenage pregnancy and childbearing, thus contributing to inequalities that start early in life and continue throughout the life course.

Boyden et al. (Chap. 14, this volume) examine the causes and consequences of childhood poverty and inequity, using a comparative, mixed-method cohort-sequential design to provide evidence from Young Lives project in four LMICS. They illustrate how influences associated with poverty and inequalities have shaped the development of mathematical and language competencies that, in turn, are associated with school completion and further education and training.

The 2030 Global Agenda includes ending all forms of violence against children as an explicit goal (SDG target 16.2). Alampay et al. (Chap. 15, this volume) highlight the scientific basis and potential of parent education and skills development program to prevent child maltreatment. *Parenting for Lifelong Health-Philippines* is a local and international multi-sectoral collaboration that conducted a rigorous test of a culturally adapted parenting intervention within the Philippine conditional cash transfer service delivery system.

Key Emerging Themes

The Role of Culture and Context

The most frequent theme across most of the chapters is the importance of culture and context for human development globally; there is no general human development apart from context as humans are shaped by their environment, including the people in them (who deliver culture.) The importance of culture and context is emphasized in many forms such as the importance of having country-specific tools (Burchinal and Broekhuizen, Chap. 19, this volume; Dogra and Kaul, Chap. 2, this volume; Dowd et al., Chap. 20, this volume; Vijver and He, Chap. 18, this volume; Wuermli et al., Chap. 16, this volume), the need to integrate traditional practices into programs (Motta and Yoshikawa, Chap. 3, this volume; Tchombe et al., Chap. 7, this volume), family and community contexts for delivering programs (Abubakar et al., Chap. 10, this volume; Alampay et al., Chap. 15, this volume), and locally valid measures (Dogra and Kaul, Chap. 2, this volume; Serpell, Chap. 21, this volume). The importance of political context is mentioned in a few chapters, especially the importance of good governance as a prerequisite for policy impact (Black and

Merseth, Chap. 5, this volume; Dimitrova et al., Chap. 9, this volume; Koller et al., Chap. 8, this volume; Motta and Yoshikawa, Chap. 3, this volume; Perez-Amador and Giorguli Chap. 13, this volume; Serpell, Chap. 21, this volume; Tchombe et al., Chap. 7, this volume). Several chapters mention specific skills needed for healthy development such as technical and nontechnical skills (D'Sa et al., Chap. 11, this volume) and cognitive skills (Boyden et al., Chap. 14, this volume; Serpell, Chap. 21, this volume). Some chapters mention key agents of change: family and community resources for protection and promotion (Abubakar et al., Chap. 10, this volume; Alampay et al., Chap. 15, this volume; Koller et al., Chap. 8, this volume); children and youth as agents of change (Koller et al., Chap. 8, this volume; Sanson et al., Chap. 6, this volume). Other chapters focus on key implementation systems, such as multiple system partnerships (Oburu and Yoshikawa, Chap. 24, this volume) and regional collaborations (Akinsola and Sharma, Chap. 23, this volume) as well as the need to have scalable approaches (D'Sa et al., Chap. 11, this volume; Motta and Yoshikawa, Chap. 3, this volume; Sanson et al., Chap. 6, this volume). The consensus among authors is that there has been tremendous progress in advancing developmental science to be useful for policy frameworks such as the SDGs and there is much work yet to be done, especially in low- and middle-income countries. In addition, some of the chapters also contribute to the UN's special focus on "leaving no one behind" which is a key theme of the 2030 Agenda. We have chapters on deprived children (Tchombe et al., Chap. 7, this volume), girls (Perez-Amador and Giorguli, Chap. 13, this volume), marginalized minorities (Dimitrova et al., Chap. 9, this volume), and those with disability (Abubakar et al., Chap. 10, this volume; Serpell, Chap. 21, this volume).

Equity and Inclusivity

Issues of equity and inclusivity are crucial multilevel sources of influence on sustainable development of young people. Poverty, rural location, repeated exposure to environmental and other hazards, and belonging to an ethnic or language minority or low-caste group are consistently found to be key drivers of disadvantage and to be associated with children doing less well across a number of outcomes, including growth. Boyden et al. (Chap. 14, this volume) use results from the Young Lives Study in Peru, Vietnam, India, and Ethiopia since 2002 to understand the effects of poverty and inequality on achievement through childhood and adolescence, focusing on SDGs goals 1 (end poverty), 2 (end hunger), 3 (ensure health and well-being), 4 (inclusive and equitable quality education), and 6 (water and sanitation for all). They identify key proximal risks to children, starting in early childhood with stunting, psychological well-being of women, and quality preschool. In middle childhood and adolescence, the key threats to the development of literacy are poor quality schools and parental work demands on children that compromise their study time. Remarkably, they also found significant plasticity in development when key interventions were available. They reiterate the need for scaling up access to better opportunities to learn so as to enhance the key competencies and school completion

will be likely to reduce the probability of intergenerational transfer of low educational outcomes.

Although gender equality and women's empowerment have advanced in recent decades and girl's access to education has improved, the rate of child marriage has been stable for several decades. Perez-Amador and Giorguli (Chap. 13, this volume) discuss the risks of child marriage and early transitions to adulthood in LMICs, using Mexico as a case example. They argue that rates of child marriage and other correlates (early child bearing, early school leaving) have not declined with increasing educational opportunities for girls, as had been expected. Therefore, linking to different aspects in the SDGs, they argue that eradicating child marriage must itself be the target of policy change.

There is much evidence about increased prevalence of abuse and violence against children. Two chapters deal with this crucial issue. Alampay et al. (Chap. 15, this volume) focus on preventing child maltreatment, featured in SDG Targets 5.2, 16.1, and 16.2, addressing violence against children. Using the case example of the Philippines, they provide developmental science evidence that parent education and more specific parent interventions can be highly effective in preventing child maltreatment. Much remains to be done, though, in implementing effective programs globally in LMICs, requiring partnerships among scientists, communities, governments, at all levels. They describe the Masayang Pamilya ("MaPa") program in the Philippines that has proven effective in low-income families in reducing child maltreatment. The other chapter by Sittichai et al. (Chap. 12, this volume) link several SDG targets (e.g., 5.2, 16.1, 16.2 and some indicators) to the widespread phenomenon of bullying, including cyberbullying, among young people globally, and identify how addressing bullying would advance several SDGs that focus on youth violence, gender inequality, discriminatory policies, and lack of safe spaces. They use case examples from research in Thailand but apply their findings globally. They recommend several policy changes for the effective implementation of anti-bullying programs to curb online abuse and victimization.

Youth well-being is at the core of sustainable development. Dimitrova et al. (Chap. 9, this volume) focus on SDGs 3 (good health and well-being), 4 (inclusive quality education), and 10 (reduced inequalities) from the perspectives of positive youth development and mutual intercultural relations. They report research examining integration of ethnic and national identities with optimal outcomes among Roma youth in six European countries. The country with more positive group relations and explicit integration policies yielded the most positive outcomes for minority youth growing up in disempowering contexts, demonstrating that it is possible to facilitate positive development for all. The authors in their implication suggest the need to support positive identities and their intertwinement at individual and group levels. There is also the parallel necessity to eliminate discriminatory laws, policies, and practices at a more societal and political level.

Children with special needs need special attention and protection. The chapter by Abubakar et al. (Chap. 10, this volume) discuss research demonstrating the power of community dialogues as a strategy for identifying and addressing child protection needs in Tanzania. Developmental science is well-positioned to address

effective child protection of children with special needs, especially if participatory and applied approaches are used to augment traditional research methodologies. Community-based interventions, developed and led by grassroots institutions and informed by contextually grounded knowledge, are more likely to be responsive, impactful, and sustainable than top-down initiatives developed by outsiders, especially when protecting and supporting children. Similar conclusions are drawn by Serpell (Chap. 21, this volume) when he discusses the use of research evidence in policy formulation to enhance child development opportunities, using the example of Zambia. He argues that policy is ideally made by multiple stakeholder groups with diverse perspectives on the interpretation of research evidence. Rich information about the social, cultural, political, and economic context are essential for comparisons from one society to another. Finally, parental ethno-theories are essential to understanding child-rearing practices.

Young People as Agents of Change

Young people can be powerful agents of change. Sanson et al. (Chap. 6, this volume) focus on the impact of climate change on the health and well-being of young people. They link SDG 13 on climate change to all others as a central component for sustainable development to individuals as well as the global environment. They argue that children and youth (especially those from LMICs) are the greatest victims of climate change but also can be deployed as powerful agents of change, using extant developmental science research. They also note that it is imperative for children/youth as well as researchers from LMICs to engage both the environmental and human aspects of climate change to design effective responses to it in local contexts. Using indigenous strategies, Tchombe et al. (Chap. 7, this volume) present Mediated Mutual Reciprocity (MMR) to engage children and youth in their own development. MMR engages children/youth as responsible learners, for themselves and with their families and communities. This proven approach combined with good governance could be effectively used with providing quality health and educational opportunities for deprived children and other important leverage points of the SDGs. Extending this concept of youth in charge of their own development, Koller et al. (Chap. 8, this volume) focus on Mozambique youth as a leverage point for achieving the SDGs in that country. Thus far national policy has only focused on SDGs 1 (end poverty) and 2 (end hunger, improved nutrition), but attention to young people could drive attainment of other goals if youth were socially integrated into national life, with access to education, health, justice, and other basic services.

For young people to become future leaders, they need special skills for a healthy transition to adulthood. D'Sa et al. (Chap. 11, this volume) identify transferable skills in youth livelihood development. They argue that "soft skills" need to include the ecological context within which skills will be used, thus broadening the framing of SDG Targets 4.4 and 8.6. Programs in LMICs should begin with what strengths youth bring to programs, include how skills can be generalized across domains, and

account for the diversity inherent in measuring behaviors and skills in varying contexts.

Measurement and Monitoring Development and Well–Being Indicators in SDGs

To better inform the progress at all levels, we need to strengthen our capacities to measure, model, and monitor relevant dimensions of sustainability. Within each of the 17 SDGs are a range of targets that provide the basis for a roadmap for action. Progress toward these targets is measured through a set of globally harmonized indicators for monitoring performance (see Appendix A). Monitoring and evaluating progress within the SDGs pose several challenges for local and subnational governments as there are many possible differences between cities, including geographical, socioeconomical, and governmental, which make it difficult to select globally applicable and meaningful indicators. In addition, because the SDGs will largely be implemented at the local level, specific city-level indicators will be necessary (United Nations 2015). As demonstrated by the MDGs, monitoring and evaluation are still often pursued in a disintegrated manner, and "performance" is still monitored separately within sectoral divisions and different disciplines.

Wuermli et al. (Chap. 16, this volume), while focusing on the education goal SDG 4, examine some of the methodological and measurement challenges and explain how developmental science can inform the choice of outcomes, processes, and mechanisms that yield the greatest promise in advancing countries ability to formulate solutions and provide guidance on how to measure educational phenomena to endure maximum policy relevance. They conclude by giving specific recommendations for how developmental scientists can plan relevant research that can contribute to the effective realization of the SDGs.

Life-course theory aids our understanding of the influences that shape the trajectories of people's lives across time and contexts. Banati (Chap. 17, this volume) examines the potential of longitudinal data within the life-course theoretical framework to inform policy and design programs for realization of global goals.

Vijver and He (Chap. 18, this volume) examine key methodological challenges in the measurement and monitoring of SDGs and other comparative studies on aspects related to sustainable development. Using examples from large-scale educational survey and positive youth development, they discuss ways of dealing with challenges related to how to strike a balance between emic (culture specific) and etic (culture comparative) perspectives, the need to employ a systematic framework to analyze cross-cultural data, and the infrequent use of test adaptations.

Burchinal and Broekhuizen (Chap. 19, this volume) address another critical methodological issue: that of internal and external validity in creating and evaluating programs and practices in meeting the SDGs for children. They demonstrate using examples from the study of the impacts of child care and early education to

illustrate how the methods can be useful in addressing an important issue for sustainable development. Taking the case of early childhood further, Dowd et al. (Chap. 20, this volume) advocate the use of holistic and locally relevant measurement to both track and enhance progress toward SDG 4.2 given the premise that early childhood requires a more multifaceted lens than other sectors, necessitating multidimensional assessment, policies, and solutions.

Serpell (Chap. 21, this volume) discusses two cases from Zambia where evidence from systematic research was cited in support of specific aspects of the educational policy. The first is on building competence in an indigenous language versus English medium scheme in schools, and the second is on community-based support for children with special educational needs. The author highlights the need for optimizing application of scientific research to educational policy with close attention to contextual factors; using multidimensional criteria to evaluate pilot projects; building gradual, localized fine-tuning into the process of scaling up interventions; technical input into detailed policy and implementation processes; and co-construction of productive dialogue among stakeholder groups with varied perspectives.

Key Emerging Theme: Need for Culturally Sensitive, Age-Appropriate, Rigorous Measurement

Several chapters in this volume examine different methodological, developmental, and cultural aspects of measurement, why measurement matters for achieving the SDGs, and how developmental science can inform the debate around what to measure. Wuermli et al. (Chap. 16, this volume) discuss why universal indicators and especially those developed in the minority world (industrialized, high-resource contexts) often fail to capture what is most meaningful locally (also Dogra and Kaul, Chap. 2, this volume). Locally valid and meaningful measures and developmental frameworks may yield the largest impact on policy and programs, but they are usually not generalizable globally (also Burchinal and Broekhuizen, Chap. 19, this volume). What is required is testing all measures across cultures and contexts, identifying datasets that may already have rich developmental assessments/measures, and creating partnerships among developmental scientists and implementing organizations and governments to ensure that scientific findings inform policies and programs.

Methodological issues in the context of the need to balance emic (culture-specific) and etic (culture-comparative) perspectives are important considerations. Van de Vijver and He (Chap. 18, this volume) provide a taxonomy of bias as methodological background and draw from comparative studies in positive youth development as illustrations. Equally important are methodological issues for assessing program effectiveness. Burchinal and Broekhuizen (Chap. 19, this volume), using preschool programs as an exemplar, emphasize the importance of rigorous studies for policy makers and practitioners, with careful attention both to internal (program effectiveness) and external (which practices effective for whom) validity.

Quantitative indicators bring precision to the evaluation of interventions but may miss the purpose by mystifying the process of evaluation, thus requiring key qualitative information (Serpell, Chap. 21, this volume). Dowd, Pisani, and Hsiao (Chap. 20, this volume) advocate for the use of holistic measures to track and enhance progress toward SDG Target 4.2. Such holistic measures would include multidimensional assessment, policies, and solutions for early childhood education to facilitate dialogue about quality and efficacy. They argue that holistic assessment with home environment information better fits with diverse populations and facilitates context-specific rigorous assessment for local collaboration, policy, and practice.

In order to monitor progress on SDGs, it is important to measure trajectories toward the global targets in countries, both at the national and global level. Banati (Chap. 17, this volume) argues that better understanding of life-course dimensions of trajectories, transitions, and critical periods is important to achieving the SDGs. Longitudinal studies reveal the many ways that humans develop, with many ways of achieving developmental success. These results suggest that there are likely to be many ways, consistent with the many variations globally in contexts and cultures for children and youth to develop well and thrive. She urges the use of longitudinal research designs to study development across cultures. More specifically, longitudinal studies contribute to country responses to the SDG challenges by (i) helping to understand enduring change and equitable progress by analyzing the dynamics of risk in a given cohort, (ii) uncovering time-specific complementarities across goals and targets to inform coordinated policy responses and improve overall effectiveness of SDG-focused reform, and (iii) helping to provide quality checks of cross-sectional data which will be used to operationalize goals and targets in SDGs. The Progress for Every Child in the SDG Era report (UNICEF 2018) concludes that it's hard to measure trajectories toward the global targets since in many countries the data is not available. When trajectories can be measured, many countries are not on track to reach the global targets by 2030. Thus to reliably implement and monitor progress on the SDGs, we need data and statistics that are culturally relevant, accurate, timely, sufficiently disaggregated, accessible, and easy to use.

Policy and Systemic Change: Networks, Partnerships, and Capacity Building for Developmental Science

There is substantial gap between current institutional and human resource capacities and the requirements for achieving the SDGs. The 2030 Agenda emphasizes the requirement for researchers to collaborate with policy makers, practitioners, and other stakeholders in providing evidence-based solutions to sustainable development challenges. One such organization that facilitates such activities is the UN Sustainable Development Solutions Network (SDSN) that has been operating since 2012 under the auspices of the UN Secretary-General. SDSN mobilizes global scientific and technological expertise to promote practical solutions for sustainable

development, including the implementation of the SDGs. The aim is to accelerate joint learning and promote integrated approaches that address the interconnected economic, social, and environmental challenges confronting the world. Much of SDSN's work is led by national or regional SDSNs, which mobilize knowledge institutions around the SDGs. Several thematic networks mobilize experts from around the world on the technical challenges of implementing the SDGs (http://unsdsn.org/).

Brandt et al. (Chap. 22, this volume) recommend a six-step procedure that summarizes actions to be undertaken and issues to be considered on the part of researchers. They further elaborate on the concept of a Third Mission that obligates universities to contribute new knowledge with social and economic perspectives in mind. The University of Vienna serves as a case example to demonstrate how a distinct Third Mission profile can be developed keeping in mind the societal challenges and the 2030 Agenda for planning new research.

The chapter by Akinsola and Sharma (Chap. 23, this volume) focuses on SDG 17, with capacity building as one of its dedicated targets as a possible course of action to achieve the goals for the 2030 Agenda. Case examples of developmental science programs influencing policy decisions related to children and youth are explored, so as to set the stage for the importance of investing in professional training of developmental scientists. Gains made by developmental science and its far-reaching impact with existing programs at some of the leading universities in both the minority and majority world are discussed. The capacity-building initiatives of key developmental science societies are examined to understand how they encourage collaboration among researchers across countries, especially early career scholars.

Oburu and Yoshikawa (Chap. 24, this volume) discuss the roles of transnational multiple stakeholder partnerships (MSPs) in addressing development and implementation challenges affecting youth and children in both high-income countries and LMICs. They discuss the role of the major stakeholders—the national government, community members, civil society organizations, private sector, and researchers—in terms of their stakes in working toward SDG progress. Then they discuss how the networks across these groups or MSPs can help achieve progress using examples and discussion of challenges, strengths, and opportunities in both individual stakeholder approaches and MSPs. The role of researchers is highlighted in general and developmental science in particular, in the work of MSPs on the SDGs.

Key Emerging Themes

Capacity Building for Developmental Science

The 2030 Agenda calls for establishing effective networks and partnerships for mobilizing and sharing knowledge, expertise, and resources to support and provide solutions to the achievement of SDGs in all countries. Brandt et al. (Chap. 22, this

volume) make the case for capacity building for sustainable development, among researchers, practitioners, and other stakeholders, especially policy makers. They describe a systematic six-part procedure for such a collaboration to improve young lives. Finally, they argue that universities should accept this capacity building as a third mission. Akinsola and Sharma (Chap. 23, this volume) focus on capacity building of developmental scientists, especially in LMICs, as essential for achievement of the SDGs. They describe effective university programs in developmental science, as well as programs offered by scientific societies. They suggest between- or among-researcher collaborations as well as university partnerships to expand developmental scientist capacity. Oburu and Yoshikawa (Chap. 24, this volume) discuss multiple stakeholder partnerships to achieve the SDGs. Since achievement is complex, engagement of all stakeholders is required for successful implementation of programs. Feedback is needed for all to optimize their contributions. Engagement of communities, perhaps the most underutilized stakeholder, is crucial for sustainability of efforts. Achievement of SDGs would require effective integration of actionable policies based on national, regional, and global contexts.

Investing in Research in Developmental Science in LMICs

Most chapters in this volume emphasize the need to prioritize quality expansion of developmental science in the LMICs. Especially important is to capture regional and in-country knowledge and to understand the social and cultural diversity and its implications for working toward the SDGs (Dogra and Kaul, Chap. 2, this volume). A strong critique emerges from the field of culture and human development regarding the assumed universal nature of interventions intended to achieve progress on the SDGs, both within and across countries' dimensions of cultural diversity (Motta and Yoshikawa, Chap. 3, this volume). Ponguta et al. (Chap. 4, this volume) identify various research gaps in the interdisciplinary research and programs for promotion of prosocial behaviors that maximize participation, adherence, and effectiveness of the programs and policy analyses to understand the formulation, implementation, and scalability of crosscutting policies on peacebuilding through ECD.

Most of the theories and evidence relevant to climate change have been derived in the minority world. There is clear need for more developmental science research in LMICs, led by local researchers, on the environmental and human aspects of climate change and effective ways to respond to it in local contexts (Sanson et al., Chap. 6, this volume). Developmental science can also contribute by bridging the gap between theoretical knowledge and application, by illustrating which identity dynamics (or other relevant factors) and which intervention programs can provide opportunities for minority youth growing up in disempowering context (Dimitrova et al., Chap. 9, this volume).

The SDGs present an important opportunity for developmental science researchers to build on the global momentum for positive change for children and young people. Particular attention needs to be given to developing the capacity of developmental science researchers in the LMICs to attend to these challenges (Sittichai

et al., Chap. 12, this volume) and the need for the international research community to engage LMIC scientists in meaningful collaborations with other researchers in both LMIC and HIC contexts to enable a sharing of knowledge and resources (Alampay et al., Chap. 15, this volume) with local researchers seeking ways to engage partners and link into existing research-practice networks (Wuermli et al., Chap. 16, this volume).

What's Missing from This Volume

While we believe that we have gathered an excellent set of chapters, we have not covered all the contributions from developmental science. Similarly, while we have a good sample of studies from LMICs, we have not covered all contexts or regions. And there is especially much more to learn about development in LMICs. While we have included researchers from LMICs in almost every chapter, there are simply not enough researchers and research infrastructure in LMICs to produce this knowledge.

We earlier mentioned the importance of biological development in developmental science, yet we have no chapters discussing these results and how they might be important. Both developmental neuroscience and genetics, especially epigenetics, are important components of developmental science. Similarly, both mental health as a global health topic important to the SDGs and implementation science for programs to improve health and well-being- have been insufficiently covered.

Developmental neuroscience has demonstrated, for example, how early experience affects the brain and subsequently the developmental course. Children who suffer physical or sexual abuse, for example, tend to show lifelong effects of their abuse in every aspect of adult functioning, including health, as well as educational and occupational attainment (e.g., Petersen et al. 2014). Fortunately, even severe abuse can be treated, with positive effects (Petersen et al. 2014, Chap. 4). Similarly, even among those with serious abuse, positive developmental trajectories can be achieved (Oshri et al. 2017). While few of these studies have been conducted in LMICs, with the notable exception of domestic violence effects on public health, the basic effects are likely to be similar. Most likely to be different across contexts are the protective factors as well as the cultural and societal opportunities for healing. Learning from other cultures will surely expand our understanding of the developmental processes related to early trauma, protective and risk factors, and modes of healing from cultural sources as well as societal programs; what may differ are the opportunities for healing though many programs do exist.

Developmental genetics is also important. We know from many studies of identical twins reared apart (e.g., Wong et al. 2005) that having a gene for a disease does not mean the person will necessarily develop the disease; many factors may play a protective role. More important for this discussion is recent research on *epigenetics*, the process by which experience changes how genes express themselves. This means that the functioning or expression of genes we are born with is altered by our

experience and in return affect our outcomes. Thus, it becomes similar to the process of brain development in which experience becomes encoded in the brain to affect the course of subsequent development. Recent research is examining how early sexual abuse affects the epigenome as well as behavior (e.g., Meaney 2010). Again, this research is currently on minority world samples.

There are also studies on how the brain is affected by culture, as with the new field of *cultural neuroscience.* Over the past decade or so of this field (e.g., Kitayama et al. 2018), it has been demonstrated that culture is stored in the brain, long after memory recalls the cultural experience affecting behavior. These studies demonstrate that behavior and brain patterns are two sides of the same coin but with cultural experience more likely to be causal and brain serving as the retention/storage receptacle. Further, studies (e.g., Chiao and Blizinsky 2010) have demonstrated how the processes work, with many examples of behaviors and cultural experiences. This research has been conducted in many parts of the world though the minority world still dominates, largely because of the equipment needed for the neuroscience portion of the research. Yet the breadth of populations gives more external validity to the results.

Crockett (2018) recently articulated the need for research on the interface of development, culture, and neuroscience or developmental cultural neuroscience. She made a compelling case for the importance of the intersection of these areas for understanding adolescence globally, an argument that extends to all development.

Global mental health research is an extremely important topic for achievement of the SDGs, for parents, as well as for children. We worked hard to solicit a chapter on this topic but did not succeed. Patel et al. (2007) conducted ground-breaking research on mental health of adolescents globally and also identified effective ways to address mental health in low-cost interventions globally. Yet the use of these approaches has been too limited. It would make an enormous difference globally to have broad implementation globally of effective programs.

A final area important to mention is that of *implementation science*, a field that serves effective implementation of programs. Many chapters did touch on this area so it was not neglected. We have now learned that there are many issues required for effective implementation of programs once they have passed initial scientific tests. Implementation science is the scientific study of barriers to and methods of promoting the systematic application of research findings in practice, including public policy. Going from small-scale research in schools or healthcare to national and especially global scale requires much knowledge of the many things that can and do go wrong and how to best launch large-scale program implementation. This is now a field with journals (e.g., *Implementation Science* published by Springer) and university programs.

Because all of these newer fields will improve developmental science, we believe that they will help both understanding of issues and effectiveness of efforts to address them. For example, a recent finding in developmental neuroscience is that one allele of a gene (DRB1) is protective for many diseases and health issues including the aging brain, malaria, and other tropical diseases (e.g., James et al. 2018);

importantly, this allele is much more prevalent in Africa, and especially East Africa (Solberg et al. 2008), making it easier to consider preventive interventions for that region. Similarly, knowing that while early child abuse damages the brain and healthy development, research that demonstrates its recovery with effective interventions tells us that we should not give up on abused children but rather work to put them in safe, healing situations. All of these findings are extremely important for achieving the SDGs.

As noted earlier, the chapters focus on data/results from many majority world countries, yet we can still not say with confidence that we have a solid body of developmental science research on the majority world and, in particular, lower- and middle-income countries. Because the major problem is an insufficient number of majority world developmental researchers, this will require intensive effort for new collaborations between minority and majority world researchers, partnerships between universities from these parts of the world, and international developmental scientific societies placing a major priority on developing research capacity among majority world researchers. As a few chapters in this volume noted, effective partnerships are those that value all parties equally, in all respects. Effective partnerships are not extractive, that is, simply extracting data from people in a location without any collaboration with communities or especially local researchers. Instead effective partnerships engage local researchers and communities at all stages of the research from research design through dissemination of results, the latter especially essential to achieving impact. Effective partnerships engage using the principles of mutual interest, mutual benefit, mutual responsibility, and mutual respect. The International Consortium of Developmental Science Societies (ICDSS) could serve a valuable role here by grounding scientific partnerships in effective research ethics.

We also note that countries are also rapidly changing in their development of research infrastructure. Some majority world countries such as China and India are rapidly increasing their funding for research and especially developing their research infrastructure as well as their researchers for rigorous research careers. The goal must be to strengthen developmental science in every country. As we have argued in this volume, we believe that better developmental science research will strengthen national capacity to meet the SDGs.

Unasked Questions

Apart from emergent fields that were not included in this volume, and regions of the world with scant attention, we could speculate about the questions that have not received sufficient attention. We believe that there likely are many such questions, and the inattention would be well-served by more researchers coming from LMICs to pose the questions that have not come from minority world researchers. Put

another way, there is much more research investment per capita in minority world problems such as diseases that affect few people than many of the problems afflicting millions of people or such as poverty and its many resulting consequences. We have seen many interesting questions emerge from early career scholars in LMICs, questions that would not emerge from the minority world. For example, who (or what modes) will preserve valued cultural traditions once the older generation passes? Or are we headed toward a more homogeneous world? This is especially important relative to research demonstrating the power of traditional strengths (e.g., Nsamenang 1992). What modes of care and support are effective with the elderly in cultures where the young are gaining education and moving away? What traditional medicines/modes of healthcare and healthy living that kept generations healthy are now being lost with shifts to "modern" medicine? We need research conducted by knowledgeable local researchers that embeds understanding of developmental processes and their variations in various cultures. Research is needed on effective interventions capitalizing on cultural strengths and engaging local communities for sustainability. Developmental science will be strengthened by research generated by LMIC researchers.

Overall Impact of the Volume and Developmental Science Research

A point made in many chapters is that sustainability of efforts is crucial. There is little point in introducing an intervention and in investing the time and effort for implementation, if it is unlikely to be sustained. One of the findings of implementation science is that efforts are more likely to be sustained when they are embraced by the intended beneficiaries. And intended beneficiaries are more likely to embrace programs when they were engaged from the start, from design through to implementation. When intended beneficiaries are engaged as key stakeholders, they are more likely to share information about what they want and how programs will best address their needs. Such community-engaged approaches are more likely to be sustained, unlike top-down programs imposed by experts. Most of the chapters in this volume recommended this stakeholder-engaged, culturally sensitive approach based on research.

Achieving impact is another key criterion for program effectiveness. Sustainable programs are the most likely to achieve impact. Another measure of impact is the extent of change for cost or cost-effectiveness. Programs in which intended beneficiaries are engaged are likely to cost less because they will play a voluntary role in embracing the changes they want. But there may be additional costs of achieving impact depending on the area of change and whether expertise is required. Medical care is likely the costliest intervention, whereas educational interventions typically

cost less even though teachers have important expertise. But many broad programs can be done with low-cost approaches to deliver any expertise, such as through videos. Again, several chapters in this volume focus on broad program delivery that is effective and can achieve impact.

Another thrust in many chapters is a need to prioritize SDGs from a local and regional perspective in the areas where they are going to be implemented. Due to complex interdependencies between various implementing departments/agencies and overlap among goals, conflicting issues may arise. In such situations, holistic systems thinking is essential for identifying knowledge gaps, initiating solutions-oriented research, as well as developing integrated assessments with the participation of multiple stakeholders.

Almost all of the chapters link their content to specific SDG goals. This should make it easy for the volume to be useful for practitioners to use the content. To be sure, not all the SDGs are addressed in this volume. SDG 4 on inclusive education is likely the one on which there is most content in the volume. Other SDGs are less heavily addressed. But there is much here of value to program implementers and policy makers.

There is therefore much opportunity and need for the advancement of the field for the developmental science community to engage in and develop forward-looking research that has the potential to support new interconnected development pathways, particularly in highly interlinked areas of global sustainability concerns.

We are grateful to the authors for embracing the vision for the volume and providing so much developmental science research of value to those who can use it. We hope that policy makers and program designers/implementers who are charged with achieving the sustainable development goals in their countries will find much useful information in these chapters.

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Part I
Early Childhood Development: A Domain of Global Importance

Chapter 2
Positioning Early Childhood Development as a Sustainable Development Goal Target: Challenges and Opportunities in the South Asian Context

Meenakshi Dogra and Venita Kaul

The Context

One of the most significant advances in recent years in our understanding related to child development has been the critical role of Early Childhood Development (ECD), which not only sets the foundation for lifelong learning and development but is also acknowledged as a key input for successful completion of primary education. This global acknowledgement is evident in the growing inclusion of ECD as a subject of importance within international discourse, relating more immediately to the attainment of primary education goals but in a longer-term perspective to larger societal goals of global peace, social equity, and poverty reduction. More recently this discourse has culminated its inclusion in the recent SDGs as Target 4.2 for Goal 4 for education, which we consider as an important acknowledgment of this understanding of the significance of the continuum in learning and development.

Building on the SDGs framework, our chapter attempts to unpack the relevance, comprehensiveness, and complexity of this target of ECD, as articulated specifically in the context of Goal 4, while also recognizing its interconnectedness in achieving the other SDGs. We begin with a review of the significant contribution of multidisciplinary developmental science research, which has paved the way for more evidence-based advocacy at the international level for inclusion of this target in the SDGs. We also examine briefly the preceding policy and programmatic provisions that have been in place internationally from a historical perspective and their influence in the South Asian context. We move on to unpack the construct of ECD as articulated in terms of its subdomains and examine the significance and challenges of monitoring both quality and effectiveness of each of these subdomains. This

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would entail taking into account systemic challenges in operationalization, especially the lack of nuanced understanding of the nature and significance of this field among stakeholders and alongside the emerging sociopolitical realities in South Asian countries. Some of the key influencers, we discuss, would be the parallel and vertical governance structures and systems in place for the social sector and the neoliberal policy environment. This is interestingly to be seen alongside a paradoxical trend of reduced priority to the social sector in some governments, with emergence of the market economy. We discuss implications of these for ownership of this holistic and integrated indicator and the need for coordination and convergence in planning, implementation, and monitoring of this target across sectors. We identify some research gaps and conclude with some broad recommendations for the way forward for policy and further research in this area.

Developmental Science Research and Its Contribution to Positioning of ECD

> The last decade of the 20th century spawned an unprecedented growth in the research on early childhood. Across disciplines common conclusions began to emerge that both supported the importance of early life for the development of human potential and also provided ways to improve child outcomes and well-being. (Britto et al., 2013, p. 3)

Research across various disciplines, predominantly from neuroscience on how brain architecture develops during early years (Karoly et al., 1998) to developmental science on how children learn language and other skills (Phillips & Shonkoff, 2000) and economics and on how investment in early years can provide high rate of returns (Heckman et al., 2010), have in an unprecedented way contributed to the recognition given to ECD in the global development agenda, leading to its inclusion as a target in the SDGs. Science has also suggested new ways of thinking in ECD, with the focus not only on building strong foundations to succeed in schools but also on it laying the foundation for lifelong learning and development. Further, there is also an emerging realization that healthy development requires not just enriched learning opportunity for children; there are also risk factors identified such as *toxic stress* created in children by adverse early experiences which may affect the developing circuitry in the brain related to attention, impulse control, and problem-solving (Shonkoff, 2009).

Over and above its contribution to the education goal, evidence has been generated of ECD's larger role in impacting holistically other SDGs as well. Research indicates that investment in the early years leads to breaking of barriers of poverty (Shonkoff et al., 2012), improves nutrition and health (Gertler et al., 2013), improves learning outcomes (Kaul et al., 2017), and creates responsible communities (SDG 1, 2, 3, 4, 5, 8, 10, 11, 12, 16, and 17). This compelling evidence requires the concept of ECD to be seen not in isolation but be recognized for its potential to fetch multiple returns and contribute to attainment of multiple goals related to children and society as a whole.

Global Commitment Toward Early Childhood Development (ECD): The Journey from EFA to SDGs

With this recognition that the early childhood years lay the foundation on which children build their lives, the world has seen a global movement to improve the lives of young children, primarily through ensuring basic education. This acknowledgment began initially with the United Nations Convention on the Rights of the Child (1989), which adopted a Child Rights' perspective and brought in a holistic concept of child's right to development and protection, ratified by 195 countries. ECCE was more specifically identified and agreed to as Goal 1 in the international formulation of the Education for All (EFA) Goals in 2000. The Dakar Framework for Action on EFA defined the aim of this goal which was to "Expand and improve comprehensive early childhood care and education, for girls and boys, especially for the most vulnerable and disadvantaged children" (UNESCO 2000). Subsequently, the Millennium Development Goals (MDGs) were also positioned in 2000–2015, but these focused on improving health and education, achieving primary education and eliminating gender disparities at all levels of education by 2015. These did not specifically include ECD. The most recent and significant development has been the adoption of the Global Goals in 2015 (to follow the 15-year MDG period), comprising of 17 Sustainable Development Goals (SDGs) which are a new, universal set of goals, targets, and indicators that aim to tackle the persisting global issues of poverty, inequality, and climate change. ECD has been included as a specific target in the context of Goal 4 of the SDGs, which aims to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" (UN 2015).

Influence of International Commitment to EFA Goals on Initiatives in South Asian Countries

The global commitment to achieve EFA clearly encouraged several countries to undertake a number of policy and research initiatives. In this section, we present the range of these initiatives taken by South Asian countries, in particular Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka, for developing and implementing national, comprehensive, and multi-sectoral ECD policies and frameworks.

Policy Initiatives In Fig. 2.1, we map out the initiatives related to policies and provisions in the above South Asian countries. These have to an extent paved the way for implementation and monitoring of the SDG 4.2 in these countries. In terms of having a policy on ECCE, above mentioned all South Asian countries have developed their country-specific policy on ECCE. However, the terminology and scope may vary by country, but basic concepts and principles may be similar—emphasizing an integrated and holistic approach (UNESCO 2016a, b; UNESCO and UNICEF,

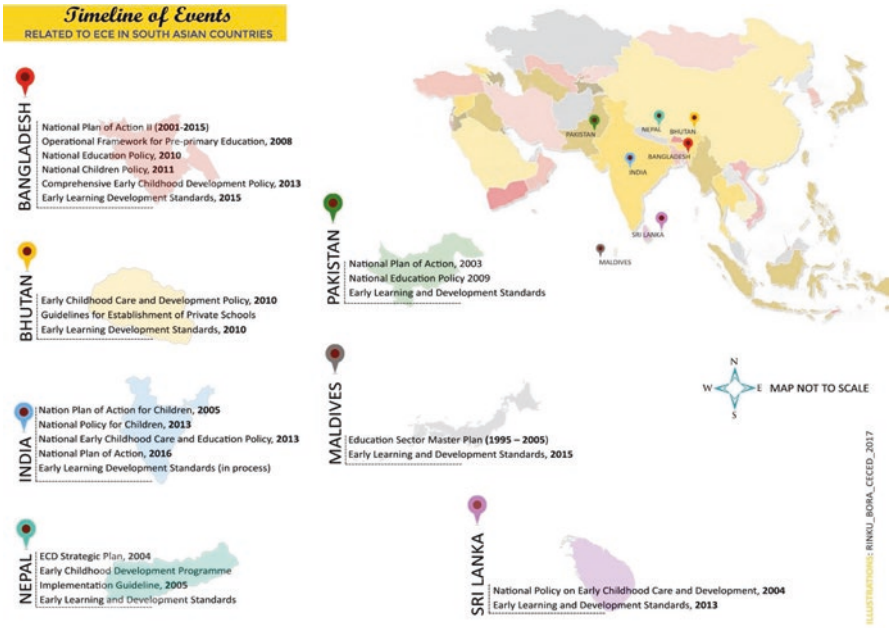

Fig. 2.1 Timeline of events related to ECD in Bhutan, Bangladesh, India, Nepal, Pakistan, Maldives, and Sri Lanka

2012). This initiative led further to development of the Early Learning and Development Standards, Curriculum Framework, and Strategic Plan for promoting early learning in many South Asian countries (UNESCO and UNICEF, 2012).

Research Initiatives The above policy initiatives in some of the South Asian countries have also been influenced to an extent by in-country research in ECD. Some of these research studies available in the public domain include the following:

India Early Childhood Education Impact (IECEI) Study: This longitudinal research followed about 14,000 rural children from the age of 4 years till they were 8 years old, from 3 provinces of the country. The study tracked the status of ECE in terms of nature and levels of children's participation, the quality of their ECE experiences, and its impact on their school readiness levels at age 5 and subsequently on their learning levels as they moved into the school system. The evidence generated from the study over the years, which confirms the significance of quality ECCE in determining children's school readiness levels and thereon their learning levels in primary grades, has been consistently informing policy making in the context of both the approved National Policy on ECCE (GoI, 2013) and the policy in the making of the domain of Education (Kaul et al., 2017).

Nepal ECD Impact Study: The Nepal study also showed positive impact of ECD programs not only for young children but for their families and communities. "It

focused on the impact the program has had on children's transition to school, which is a significant issue in a country where many children never start school and where those who do, drop out in large numbers during the first and second year" (Save the Children, p.3). A positive outcome of ECD intervention is that among the ECD participants, "the rate of Dalit or lower caste children starting school is slightly higher compared to their non-dalit peers—over 95 percent have started school" (Save the Children, 2003, p. 7).

Thus from the EFA Goal1 (2000) to the recent SDG (2016), the development in terms of policy may be perceived as a progressive shift, with Target 4.2 focusing beyond care and education to include holistic ECD as an outcome.

Early Childhood Development in SDGs: Unpacking the Concept

The ECD target toward which countries are expected to make a formal commitment is articulated as follows: "By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education" (UN 2015). The key concepts emphasized in this target are interconnected and follow the continuum of learning and holistic development (Fig. 2.2).

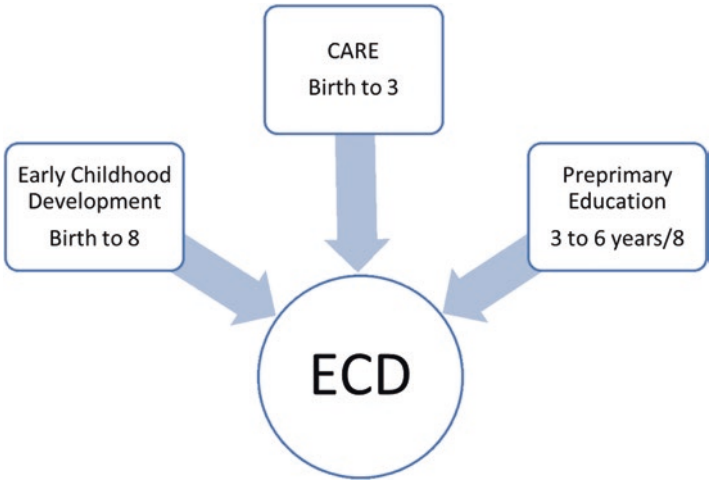

Fig. 2.2 Unpacking the "integrated" ECD—The Early Learning Continuum

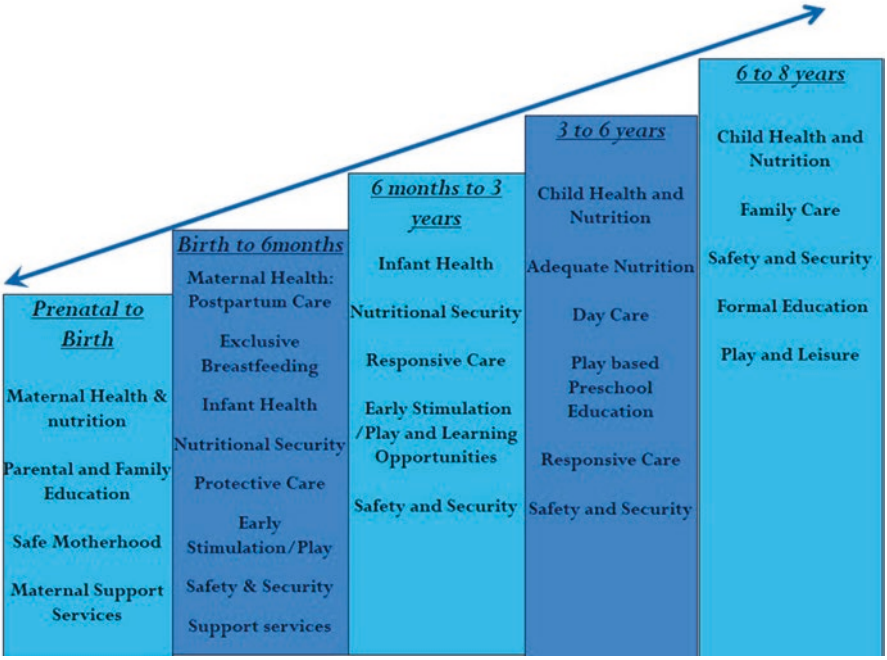

Fig. 2.3 Right to ECD—A Comprehensive Framework. (Kaul et al., 2013, p. 11)

Since the process of development is essentially continuous and cumulative in nature, ECD conceptually implies both vertical and lateral interconnectedness. On the one hand, health, nutrition, care, and education are critical components, which are interdependent and complementary. On the other hand, the substages within the continuum from birth to 8 years each have their own specific priorities, which cumulatively influence a child's development and learning potential. Figure 2.3 shows the concept of ECD along the continuum, with priorities for each substage indicated.

We now critically review the key concepts of this multicomponent target and explore opportunities and challenges that may need to be addressed by the countries, especially in the South Asian region, as they work toward achieving the same.

Unpacking the Sub-concepts: A Critique

Three specific components of Target 4.2 separately specified are early childhood development, care, and pre-primary education, all three aimed at preparing children for primary education. While the concept of ECD is itself holistic and encompasses the other two conceptually as elements of a child's early development, it is not clear why each is specified separately even as a target. With pre-primary education

mentioned distinctly, does ECD then refer to children below 3 years with specific reference to early stimulation? If so, is this not considered as responsive care which would again overlap with the third element, i.e., the care domain. In a way, the target as articulated could be perceived as a contradiction of the holistic nature of ECD with care and education getting separated from development. This presents a great deal of ambiguity, which needs clarification.

Quality ECD in Global Target 4.2

The term "quality" is prefixed collectively to the three elements defining this target. This is a key factor which is globally one of the most pressing concerns in ECD. Highlighting quality in the ECD target is an outcome of a repeated concern emanating from research evidence which is showing that poor quality implementation either can lead to no positive effects on children's development or may lead to even negative effects (Lake & Chan, 2015; Kaul et al., 2017).

The concept of "quality" also needs further unpacking and clarity, as it may lead to limited or distorted understanding of the concept. Some arguments that may come while unpacking the concept could be—What do we mean by quality? What are the key components of it? Should it be uniformly conceptualized for all countries or does it vary from country to country and from context to context? If it can be similar for all the countries, then how can we ensure cultural and contextual perspectives related to it?

There are also multiple stakeholder perspectives with respect to quality in ECD in terms of structure, process, and outcomes. On the one hand, professional understanding of ECD across the globe, derived largely from disciplines of child development, sociology, and cognitive science, is that given the interdependence of domains, ECD structurally is an integrated set of services which cater to the holistic development of the child below 6 years, consistent with the stage in which the child is and offered in a contextualized manner. In terms of processes, the understanding is that early education implies a play- and activity-based curriculum that aims to facilitate children's inherent developmental needs for physical, social, language, and cognitive development through play and activity in an exploratory, safe, and caring environment. ECD till 6 years is not aimed at academic learning through formal teaching methods. On the other hand, the practitioners, parents, and public at large understand preschool education or ECCE for 2- to 6-year-olds particularly as accelerated introduction of alphabet and numbers in a school-like environment, with the mistaken understanding that "the earlier children start the better they will learn." This disconnect in perceptions and expectations, particularly with the emergence of a vibrant private sector investment in ECD across South Asian countries hand in hand with absence of any planned regulation, has led, for example, in the case of India, to a situation where children in the preschool years, in a large number of cases, spend time learning the 3 Rs by rote with negligible opportunities for play and activity, which becomes counterproductive for their developmental outcomes, as derived from the professional understanding of ECD (Kaul et al., 2017).

Globally too there is no comparable data available on the quality of all types of care for very young children, so it is not possible to chart progress in this area since 2000 (UNESCO 2015). The recent Global Education Monitoring (GEM) Report (2016) highlights "a pathway that draws upon measurement expertise while allowing for adaptation, revision and alignment with cultural values and discourse is essential for accurately measuring and comparing the quality of ECD" (UNESCO 2016a, b, p. 211). In this context, it is important for the countries to deliberate on what constitutes "good quality" in their respective contexts and reflect on indigenous values and priorities on children's development as well as research-based quality factors that impact school readiness.

As a case in point, the longitudinal IECEI study, mentioned in the earlier section, looked at the composition of quality in preschool education in terms of its impact. The key quality factors that emerge as significant in this context are related to attributes of the teacher, curriculum planning, content and transaction, and the physical setting of the program in consonance with professional understanding of developmental appropriateness (Kaul et al., 2017). Similar longitudinal studies in diverse contexts are required to be planned to explore the quality factors and validate the same in specific country contexts for better exploration and understanding of the quality in ECD.

"Developmentally on Track": Global Indicator 4.2.1

This is positioned as one of the most significant indicators to determine whether a child's development is on track or not on track and to assess child's readiness for primary education. However, the lack of clarity on what do we mean by developmentally on track, particularly in diverse contexts, makes it difficult to define and assess. Marfo (2011) raised the similar concern that "it is difficult to define normative development in a globally comparable manner because culture influences development and, primarily, because the extent to which children achieve milestones is unknown in much of the world" (as cited in UNESCO 2016a, b, p. 215–216).

In view of the above mentioned concerns, understanding this specific indicator is a challenging task for the countries until they have sound evidence in their own cultural context. This requires cross-cultural and/or multicountry researches in developmental sciences designed to explore and identify issues of diversity.

Globally, there is also a need to build a common framework for understanding ECD in multiple contexts. Though the concept of having a universal framework has some opposing views, leading one is the notion of "multiple childhoods" which has gained significant attention in childhood studies. This is based on the idea that "multiple modernities" in South Asia have resulted in diverse childhoods and point toward looking at the child and childhood from specific cultural and contextual lens. Nevertheless, this notion has also been criticized for the risk of creating fragmented understanding and increasing inequalities (Hopkins & Sriprakash, 2015). Consequently, building common understanding will certainly bring some dilemmas such as—(a) Is it possible or justifiable to understand all children or childhood across the globe with the same lens, particularly when children are living in varied

cultural and contextual diversities? (b) How can we integrate and articulate the contextual and cultural realities into our common understanding of child and childhood?

However, we need to acknowledge these dilemmas and deliberate on how to take care of these cultural and contextual variations which has an influence on children while making policy frameworks for the successful implementation at the country and region level. Thus, the consensus needs to be built on having universal framework for understanding children and their development irrespective of their background. Since universal ways cannot be applicable in varied contexts to achieve universal goals, therefore, it is important to come up with country-specific implementation methodologies which are relevant to different needs, and this can be taken care while framing legal provisions for children living in different circumstances.

Moving forward, the countries can build on this framework and work to develop Early Learning and Development Standards (ELDS) on what children should be able to do at different ages so that they are informed by knowing what is typical or what children around them can do. This would also help stakeholders to understand the developmental trajectory of children in their contexts based on conceptually and empirically validated indicators.

Access and Participation in Global Indicator 4.2.2

The key challenge in relation to this specific indicator is its limited description and wide scope which needs to be specified with more clarity. A consistent philosophical issue, particularly in education and perhaps in all social services, has been the debate on access vs. quality and equity. Should "quality" follow "access," or alternatively, can access be defined as separate from quality? The issue is "access" to what, given that access without quality is of very little value and may also have adverse consequences. A related issue in defining quality which may arise is that is equity 'equal opportunity' or is it beyond that in terms of enhanced affirmative action to close the equity gap? Similarly the term "participation" is difficult to define. The challenge is how do we see participation, whether it is just enrolment or attendance or consistent and active participation of the child in organized learning. If it is consistent participation, then how can we define consistency? The indicator lacks this specificity, which is likely to create complications for the countries on how to collect and report reliable and comparative data on this particular indicator and give a valid profile of their respective countries. Besides, the indicator mentions participation in organized learning which is again not clearly defined since in ECE, a diverse range of provisions are available across countries which are both organized and unorganized. Even the broader curriculum in the field is often not developmentally appropriate as discussed earlier and varies across contexts, so that quality as defined by parents and practiced in day cares and preschools is different from that conceptualized and advocated by professionals in the field. At the international level, some broad guidelines would need to be developed and made available to the countries so that reliability and validity of the data can be ensured.

Status of Children in Early Childhood Development: Setting the Baseline

A review of available data from South Asian countries indicates that the efforts and commitments have undoubtedly contributed toward some progress in many aspects of ECD. This progress is largely focused toward reducing under-5 mortality which declined by 63 percent from 12.7 million in 1990 to 4.8 million in 2016 (UNIGCME, 2017) with a decline in the rate of stunting from 47 percent in 2004 to 40 percent in 2010 (Black et al., 2017). Between 1990 and 2016, Bangladesh, Bhutan, India, and Pakistan showed major decline in their under-5 mortality rates (UNIGCME, 2017). Despite these efforts and limited progress, ECD remains an area of grave concern. The number of children at risk of not attaining their developmental potential is highest among South Asian countries, with nearly 53 percent of children jointly exposed to stunting and poverty in 2010 (Black et al., 2017). A significant proportion of this percentage (40 percent) is living in India (UNICEF et al., 2012). Stunting among children is the prevailing risk factor which impact later learning and development among young children. Research evidence has shown association of stunting with lower levels of cognitive development during the primary school years of children (Walker et al., 2015). The Multiple Indicators Cluster Survey (MICS) data shows that 37 percent of children are having lower levels of either cognitive or socio-emotional development in LMICs (McCoy et al., 2016). In addition to this, the concentration of under-5 mortality is at the national level, with about half of these deaths occurring in five countries—India, Nigeria, Pakistan, Democratic Republic of Congo, and China. In fact, India and Nigeria represent together one third of the global burden. Similarly, the rate of low-birth-weight (LBW) infants is higher in South Asia. Of about 18 million LBW babies born globally each year, more than half are in South Asia (Dundar et al., 2014, p. 166). The main cause of these deaths in South Asia is major health problems of early childhood which includes pneumonia, diarrhea, and malaria which are predicted by social and ecological determinants related to child's context which includes poverty, access to hygienic water and sanitation facilities, and health services (Black et al., 2017).

In terms of access and participation of children in pre-primary, there has been a great increase in many countries over a period of time. However, most of the proliferation in pre-primary education access occurs in HICs as compared to South Asia (18.5 percent). One of the reasons of lower participation is inequities in access to pre-primary education (Black et al., 2017).

These statistics clearly show that the state of world's children particularly in South Asia is far from satisfactory. Many children younger than 5 years are at risk of not reaching their developmental potential (Black et al., 2017). To improve this situation, global agenda has prioritized the issue of ECD which now needs concerted efforts at global, national, and regional levels to achieve the specified target.

Monitoring Progress in Early Childhood Development: Opportunities and Challenges

The focus of the ECD target on access to quality *early childhood development (ECD), care, and pre-primary education* presents significant monitoring challenges. In the following section, we present an overall perspective on the challenges before focusing on the specific monitoring issues, particularly in the context of South Asian countries, related to Target 4.2 and its two global indicators.

Global Indicator 4.2.1 – Proportion of children under 5 years of age who are developmentally on track in health, learning and psychosocial well-being, by sex

Global Indicator 4.2.2 – Participation rate in organized learning (one year before the official primary entry age), by sex

Monitoring ECD Indicators: Some Challenges

Key concepts that have been indicated as measures of progress in the SDG context in ECD primarily relate to readiness to learn, participation, and provision. However, measuring these concepts is challenging because the availability and nature of data to evaluate these indicators is uneven in many countries throughout the region. In addition, there are some major systemic challenges that may require to be addressed alongside. These include the following:

(a) There is a trend toward expanding private provisions for day care and preschool education across countries, particularly in South Asia, which serve a useful purpose in the absence of adequate public provisions. However, being a completely unregulated sector, with no restrictions on their establishment or on the quality dimensions of these programs, there is no compulsion for them to adhere to any prescribed norms, despite good ECD policies being in place. There are also provisions run by NGO sector which get grants for working with the underprivileged, but these tend to be often minimalist in provisions and may or may not adhere to quality standards (GoI, 2014). In the case of India, this applies also to the ICDS in many cases (Kaul et al., 2017). These also provide a challenge for development of any regulatory mechanisms, since those would have implications for quality standards across sectors, public and private. There are also no means of procuring reliable data on these provisions in view of a laissez-faire approach, so that their numbers are at best captured through estimation, which, as in the case of India, for instance, could be grossly underestimated.

(b) A critical dimension of the quality of the ECD provision, in private or public domains, is the teacher or day care/child care worker and his/her capacities and profile. This dimension assumes systematic arrangements to be in place in a country for their professional development and support. Again with the professional development programs being largely in the private sector, as in India (Ambedkar University Delhi and National Council of Teacher Education, 2011), there is neither any reliable information on these institutions/programs in the public domain nor any MIS in place across South Asian countries which would capture these.
(c) Another challenge stems from lack of universally accepted quality and/or outcome indicators for ECD, which would lend to an operationally objective measurement of progress. With professional initiatives including measurement tools based on what constitutes quality in terms of developmental appropriateness, and practices in place which are not consistent with this expectation, there often arises the need for a compromise.
(d) The indicators may or may not be located within the mandate of any one nodal Ministry with, for example, pre-primary education often housed with the Education Department, while ECD may be with the Ministry of Social Welfare or Health. With vertical structures in place and limited convergence across these institutions, the integration of these aspects in planning and monitoring of provisions is not easily achievable.

Measures for Assessing Progress on ECD Indicators and Monitoring Challenges

In recent years, attention has focused on development of globally comparable population-based measures of ECD (UNESCO 2016a, b). Several measures have been developed and used across South Asian countries at the population level. Nevertheless, there are few dilemmas and questions related to generating globally comparable data in terms of:

(a) How realistic is it to develop a standard global measurement which can integrate national and regional data into global monitoring?
(b) How can we ensure cultural and contextual alignment of the key concepts highlighted in the target?
(c) What would be the approach to compare data of different countries which are at diverse baselines and performing differently?
(d) What kind of a sharing platform can be created for the countries that are developing and implementing ECD assessments so that there is cross sharing and learning?

Alongside, for the above specified indicators of the target, it is critical to explore feasible approaches toward resolving the challenges discussed below for any effective monitoring system to be in place.

Quality in Target 4.2

Though the target has highlighted the need for good quality preschool education, none of the proposed indicators in Target 4.2 capture the quality of provision. The issue is how can quality be ensured and measured in diverse contexts across different provisions of ECCE. Interestingly, in this context even different stakeholders hold diverse perceptions of what constitutes a good quality service or program, as discussed earlier. This is going to be a great challenge for the countries in the absence of specific indicators and concrete guidelines.

Globally, quality in education is seen as the extent to which school setting and systems support the learning and development of children. Both at the system and setting levels, several measures have been developed and used to assess quality (UNESCO 2016a, b). Some of the tools which are available for measuring the quality of the program and ECD outcomes are presented in Figs. 2.4 and 2.5. While developing some of these measures, validation studies have been conducted across various countries. For instance, East Asia-Pacific Early Child Development Scale was validated across six countries—Cambodia, China, Mongolia, Timor-Leste, Vanuatu, and Vietnam—with a sample of over 7000 children. Similarly, to date, the International Development and Early Learning Assessment has been used and validated in over 16 countries (Raikes, 2016).

To monitor quality internationally, particularly in the South Asian region, countries need to consider using and adapting the tools relevant to their context, set their standards, and use mechanism to monitor standards. This can be done by encouraging appropriate research and validation studies to develop local tools within a global framework based on priorities identified in their own specific contexts. For instance, in India, the work on standardization of the tools for assessing the quality of programs called the Early Childhood Education Quality Assessment Scale (ECEQAS) and School Readiness Instrument (SRI) has been initiated by the Centre for Early Childhood Education and Development, Ambedkar University Delhi, in partnership with UNICEF, the World Bank, and Centre Square Foundation.

Child Development Outcomes in Indicator 4.2.1

Target 4.2 focuses on ensuring that children who begin formal schooling are developmentally on track and "ready for primary education." This requires a reliable and valid measure of school readiness to be administered on children. However, school readiness as a construct involves more than just child outcomes. It also includes the need for schools to be ready for children as they come in terms of matching their learning needs and contexts and readiness of parents/families to understand what early education implies and be therefore able to partner with preschools and schools to promote school readiness in children (UNICEF, 2012). Thus, monitoring of this indicator involves multiple tools of measurement including an instrument for assessing children learning levels at school entry, a measure of the quality of the classroom processes and environment for early learning in preschool and early primary

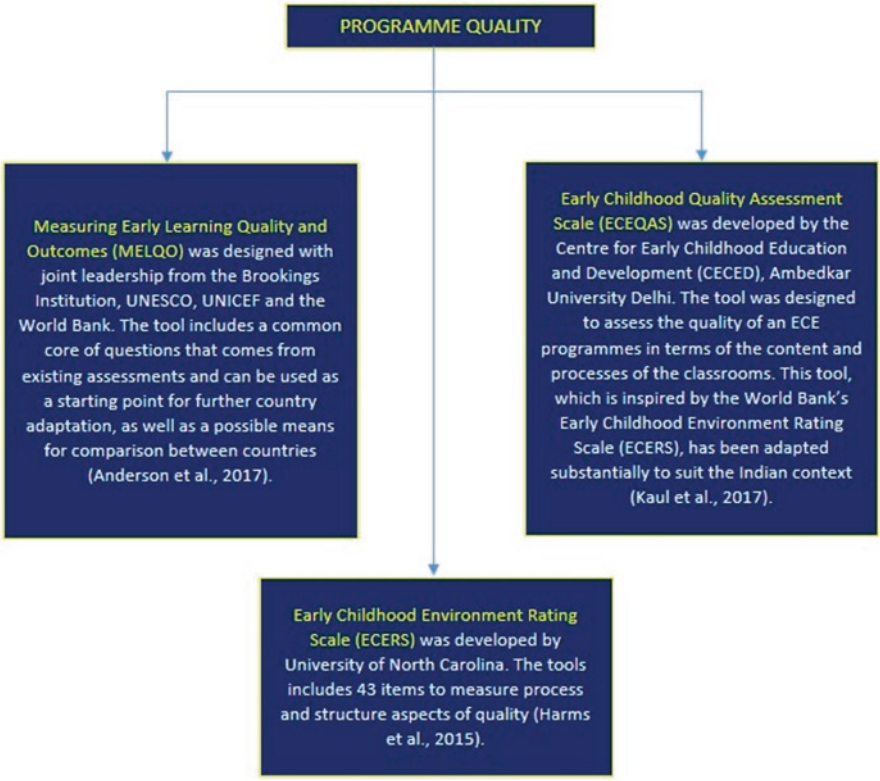

Fig. 2.4 Tools to measure quality of ECE programs

grades, and a household survey instrument which elicits information on parents/families' readiness for sending children to school in terms of the learning environment available to children.

In any such measures, particularly for child outcomes, the emphasis should be on population-based measurement or measures designed to assess the health of the system and not the individual child and inform policy at the national or subnational levels (UNESCO 2016a, b). This kind of instrument needs to provide essentially for a short and quick assessment at scale and would be more on the lines of a "dipstick" measure. For individual assessment, more comprehensive, diagnostic tools would be required in clinical settings, which are not being referred to in this context.

The development and standardization of tools to track normative development at a population level in this context for purposes of monitoring nationally and at international levels require a great deal of collaborative effort and sharing and constitute a very important research agenda on its own. A significant challenge is to monitor progress across cultures while retaining a normative framework.

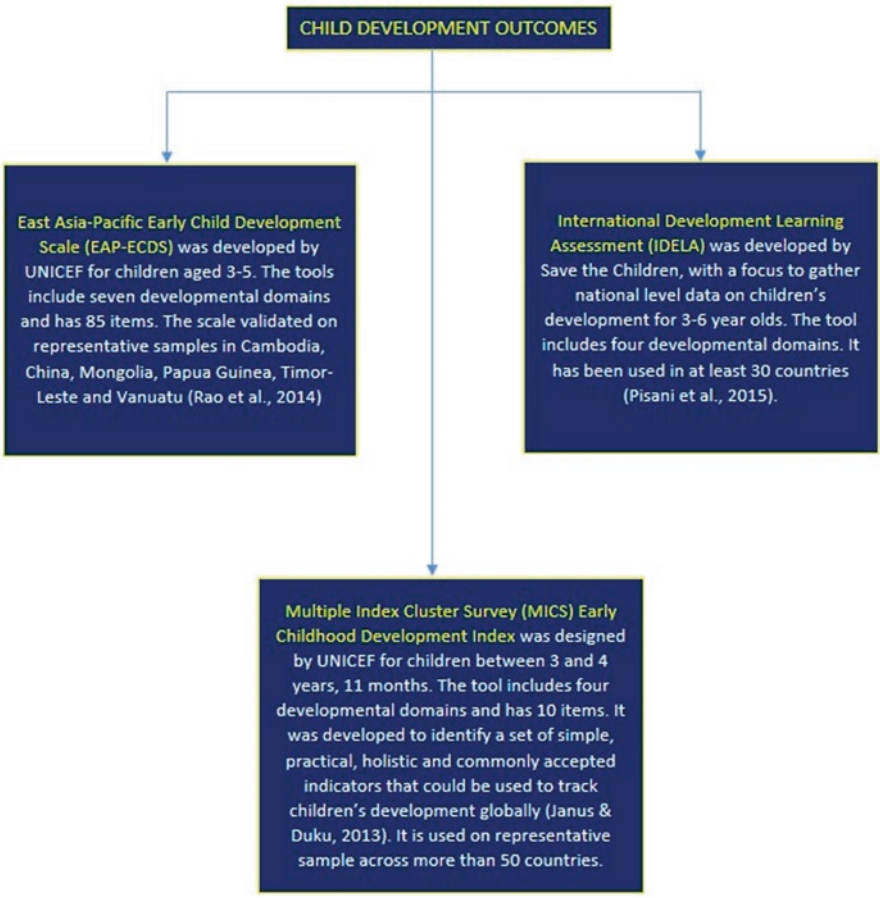

Fig. 2.5 Tools to measure ECD Outcomes

Access and Participation in Indicator 4.2.2

A major challenge in relation to access and participation is the absence of any reliable data across countries on actual number of children attending existing ECD provisions, particularly in terms of disaggregation across different services in an integrated program. The issue is also of enrolment vs. participation particularly since the latter is difficult to estimate and document. Where the data is available, the challenge is how to compare participation rates across and within countries with systemic diversities such as entry ages not being uniform. At present very few countries have free and/or compulsory pre-primary education, and with the private sector growing exponentially in this sector, as discussed earlier, and varied provisions on the ground, there is a diverse range of ECD provisions available to children.

Recent research evidence from India indicates that children's participation in preschool and early primary grades is very fluid and uneven with no alignment to

what is prescribed in policy. There can be 4-year-olds in school and 7-year-olds still in preschools, thus following diverging educational trajectories, right from the beginning of their schooling. Further, children attend irregularly, and the composition of early grades in the school system in terms of age appropriateness stabilizes only by age 8 (Kaul et al., 2017). This raises the need for each country to institute an MIS or data management system that differentiates and estimates progress on gross and net enrolment ratios separately on a regular basis to assess the efficiency of the system.

Looking Ahead: Suggestions for the Way Forward in the South Asian Region

The acknowledgment of ECD in SDGs is definitely a significant achievement. However, the comprehensive nature of the concept presents a number of monitoring challenges discussed above for the countries. In this section, we present some thoughts on the way forward to implement the SDG framework, particularly in South Asian Region.

Strengthen Scientific Evidence Science is an incredible platform for driving a research and development agenda. In ECD, while there have been innumerable pilots of innovative practices, the need now is to scale up these initiatives. This requires research in multiple contexts on ways and modes of scaling up of innovative practices. Since scaling up of the intervention may not lead to the same results in different contexts, it is also important to get a deeper understanding of why, for whom, and in what context the intervention worked well (Yoshikawa & Kabay, 2015). More scientific evidence is needed which can help in identifying diversity in contexts and which can contribute to the understanding of what needs to be prioritized in the context of Target 4.2.

Integrated Approach The needs of young children are spread across different areas of health, nutrition, protection, care, stimulation, and learning. Comprehensive development frameworks are needed to integrate the vision of policy makers and to coordinate action on the ground level (Richter et al., 2017). Most research tends to be uni-sectoral and focuses on any one dimension, whereas the need now is for multi-sectoral, multidisciplinary research which can enrich understanding of complementarities and associative benefits and can thus inform more comprehensive planning frameworks.

Multi-sectoral Coordination In most countries, all child related-services are not delivered under one department but spread across multiple departments. There is a need to ensure that the needs of the child are fulfilled in an integrated manner through appropriate and effective convergence mechanisms (Kaul et al., 2013). In Bangladesh, there is an umbrella ministry (Ministry of Women and Child Affairs)

which has been set up to enable multi-sectoral coordination across other departments. In India too there is the Ministry of Women and Child Development, but the experience shows that ECD should have a higher-level authority institution which can ensure coordinated effort by all relevant sectors at all levels, such as the Prime Minister's Office.

Advocate and Disseminate Evidence There is an imperative need to bridge the gap between research and policy and programming, demystify research findings, and communicate these in user-friendly formats for wider sharing and utilization. Research at the level of policy is at present very deficient and needs to be promoted.

Regional Partnerships There is a need to expand the participation network, including more stakeholders especially region-based networking, as this would enhance the opportunities for shared learning for the countries. This would be particularly useful in development of monitoring frameworks and tools, some of which could be used across countries within the region.

Outcome-Based Monitoring System Designing and developing a monitoring and evaluation system, in addition to measurement tools, are of significant importance. Most monitoring systems generate data which is largely for "reporting upward" purposes and does not in any way provide feedback for systemic improvement at appropriate levels. The need therefore for appositeness in data generation is important so that it can be designed in ways that can promote effective utilization of data at levels at which it is most applicable.

Sharing of Good Practices Sharing of good practices can be helpful for other countries to take informed decisions and implement strategies to improve access and quality of the ECCE programs. For instance, in 2012, the Government of West Bengal in India undertook an initiative to revamp the pre school education component of Integrated Child Development Scheme (ICDS) so that it prepares children better ready at the age of six. The positive outcomes of ECCE in West Bengal are explicit in case studies from the field which testify how attendance at model centers has risen and how the enthusiasm of the children has truly been kindled. This experience has led to other states getting inspired to set up model centers too and focus on quality.

Conclusion

The priorities and challenges mentioned in the above sections provide a direction to the kind of initiatives that countries, particularly the South Asian countries, need to undertake on priority to support the process of achievement of Target 4.2 in the context of not only Goal 4 but other SDGs too, to which it has the potential to make

a significant contribution. In this context, the significant impact of developmental science to promote healthy child development across all the countries and achieving the SDGs need to be realized. In South Asian context, very limited research initiatives have been undertaken which can guide the work further and help in effective implementation of the SDGs. Prioritization of the developmental science in the region is much needed which can be done through taking appropriate actions and adopting mechanisms such as generating relevant data on diverse contexts; planning and conducting policy-oriented research, program evaluations, and longitudinal studies; ensuring reliable measurement to generate data; using novel approaches to data collection; development and use of contextually appropriate tools; and building capacity for SDGs and policy-relevant developmental science across and within countries (Raikes et al. 2017, p. 7).

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Chapter 3
Progress Toward Sustainable Development Goal 4 in a Culturally Diverse World: The Experience of *Modalidad Propia* in Colombia

Andrés Motta and Hirokazu Yoshikawa

Introduction

In the Angostura Afro-Colombian communities on the Pacific coast of Colombia, elderly citizens play an important role in raising children and accompanying them in building a sense of belonging. During *nighttime stories* they share myths and folktales about their ancestors' experiences and how they must go on living by these traditions.

In recent years, with large-scale social change such as rural-urban migration, multinational intervention in economy, urbanization, and globalization, these communitarian moments – a form of what Rogoff and colleagues have termed "intent participation" or community-based informal learning (Rogoff 2003) – have diminished. This pattern has been observed in multiple low- and middle-income country contexts (Greenfield 2009; Levine 2007). Today, however, those leading early childhood education services in the Angostura community have noticed the potential of these traditions to promote children's development. Moreover, this tradition is formally recognized as part of a modality of the national ECD policy De Cero a Siempre known as *Modalidad Propia* or "own modality."

Modalidad Propia, which is now one of the three principal modalities of service provision of the policy, is about recognizing the power of culture through social participation and providing services based on the cultural qualities of communities

This chapter uses documents that were produced within the *Modalidad Propia* process by *Kamëntša* communities. We give our deepest recognition, acknowledgement, and respect to the *Kamëntša* communities and all those who were part of the design of this policy initiative. Yoshikawa acknowledges support of funding from the NYU Abu Dhabi Research Institute to the Global TIES for Children Center at New York University.

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while doing no harm. Understanding this approach, we argue in this chapter, is fundamental to ensure that the Sustainable Development Goals (SDGs) are met – in particular Targets 4.2 and 4.5 or Goal 4 ("inclusive and quality education for all and lifelong learning"):

> Target 4.2 ("ensuring that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education")
> Target 4.5 ("eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations")

In 2013, the Colombian government began to consider how to include this diverse population into its policy framework within its new national ECD policy, *De Cero a Siempre* (CIPI 2013). From here the idea of *Modalidad Propia* began to take shape as the result of a participatory perspective to build public policy and deliver services to diverse populations.

In its first phase (2014–2016), the *Modalidad Propia* focused on Native indigenous and Afro-Colombian communities and helping the government understand the relationship between these communities' knowledge and practices and the nurturing of their children within the role of early childhood education services.

In this chapter we describe the context of the national ECD policy of Colombia. Then we explain the development of the idea of *Modalidad Propia* and its implementation and integration into the policy. Third, we focus on one case example of *Modalidad Propia*, drawing on the experiences of the Kamëntša people in the southern region of Colombia. Finally, we discuss this approach and its relevance for implementing SDG 4 with attention to quality, equity, and diversity.

De Cero a Siempre: The Colombian Experience

Colombia was one of the first nations in South America to invest in early childhood development with public funds. For example, public preschools were first funded by the national government in 1962. Certain agencies, such as the Instituto Colombiano de Bienestar Familiar (ICBF), began providing services with a model known as "Hogares Comunitarios" where a community-mother-led group childcare, nutrition, and development program achieved wide coverage for disadvantaged families (ComisiónIntersectorial para la PrimeraInfancia (CIPI), 2013).

In 2010, based on these decades of program and policy development, Colombia began to develop its most comprehensive single national ECD policy to date, providing an intersectoral framework to encompass the prenatal to school entry period. This was built based on the prior national experiences; scientific evidence from Colombia, Latin America, and other regions; and extensive social participation (with the participation of tens of thousands of community members, leaders, and stakeholders from every region and territory of the nation in meetings to develop the policy between 2010 and 2013).

The policy was led by the Intersectoral Commission for Early Childhood (CIPI by its Spanish name), housed in the Office of the President, with participation of the Ministries of Education, Health, and Culture; the National Planning Department;

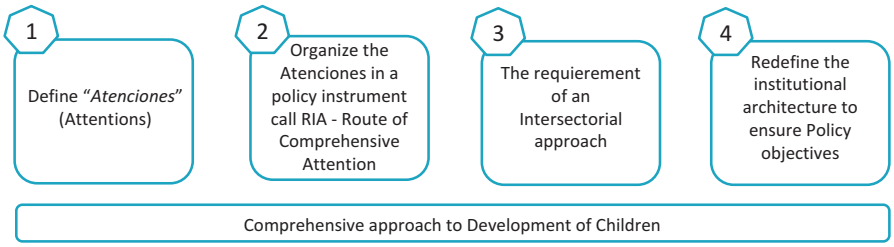

Fig. 3.1 Characteristics of the De Cero a Siempre National Early Childhood Policy of Colombia

ICBF; the Department for Social Protection; and the National Agency to Overcome Poverty. Together, these institutions developed, with a child-centered perspective, the *Political, Technical, and Management Fundamentals* (CIPI 2013) or guidelines for ECD in Colombia, the central document laying out the De Cero a Siempre strategy.

Relative to other recent national ECD policies, the De Cero a Siempre framework had several unique characteristics (CIPI 2013; Kagan et al. 2016; Vargas-Barón 2015; Yoshikawa et al. 2014) (Fig. 3.1).

First and most importantly, it put forward a rights-and evidence-based approach to what children need, in the form of *atenciones* (attentions).These were neither sectors, as is common in other comprehensive ECD policies, nor specific services and programs, as in others, but a rights-based definition of the kinds of care and attention that all children and families need to ensure their developmental potential. Eight *atenciones* were prioritized for initial emphasis in implementation between 2014 and 2018 (birth registration, health-care access through insurance, families supported in nurturing children, vaccination, early childhood education, child development and growth monitoring, access to books and literature, and nutritional monitoring and support). De Cero a Siempre was presented as a policy for all children in the country but with a particular focus on the most disadvantaged 1.9 million children below the age of six.

Second, the *atenciones* were organized in a public policy instrument called the *Ruta Integral de Atenciones* (RIA, or Route of Comprehensive Attention), which grouped the *atenciones* by age and developmental context (e.g., home, health environmen, education environment, public space). The metaphor of a route or road map also allowed for diversity in achieving the *atenciones*, depending on geographic, cultural, and political units within Colombia.

Third, each government sector (ministry and agency) had to start thinking beyond its own borders to understand how all of the *atenciones* were now part of their responsibilities while at the same time being shared with the other sectors. This assured a strong intersectoral perspective in the national policy.

Fourth, this framework required a new institutional organization, coordinated by the CIPI that included defining the role of each sector, defining the institutional architecture to ensure these objectives are met, and, finally, defining the services that each sector will provide, the way it will be provided, and the standard of quality.

The RIA was initially implemented through newly provided services for children in two chief modalities: institutional or center-based and family or home-based.

These modalities of services were led by the aforementioned government sectors, which implemented services within their own institutions while working in coordination with the other sectors.

Implementation of De Cero a Siempre produced a substantial impact on the early childhood education service in terms of coverage and quality. Over a 4-year period, they improved coverage of the atenciones, from attending to 566.429 children in 2010 to attending to 1,112,625 children in 2015, representing over half of children defined as disadvantaged by Colombia's national social protection system (Departamento Nacional de Planeación 2016). In terms of quality, for first time in Colombian history, they defined six service components along with a set of standards for each one. These components were family and community engagement, pedagogical proposals, staff, administration, health and nutrition, and safe and protective environments. From these components, some of the most relevant standards were:

- The need to hire interdisciplinary staff, including teachers, teachers' assistants, social workers, nutritionists, and coordinators, to ensure coverage of some of the atenciones in each of the modalities.
- The need to provide children with at least 80% of their daily nutritional requirements.
- The need to plan pedagogical processes through play, art, and exploration.
- The need to create and develop *Centros de Desarrollo Infantil* (CDIs, or Centers for Early Childhood Development). The national government built CDIs across the country with specialized activity spaces and materials for children as well as interdisciplinary staff across health, nutrition, pedagogy, and psychosocial support.

Deepening Attention to Diversity: De Cero a Siempre's Approach

In Colombia there are 5,150,797 children in early childhood (48.8% girls and 51,2% boys), corresponding to10.9% of the total population. Nearly a quarter (24.1%) live in rural areas; 9.8% are Afro-Colombian; 4.6% are indigenous; and 0.0082% are part of Roma communities (CIPI 2013).

During 2013 the *De Cero a Siempre* team defined a two-point strategy to incorporate diversity as a key characteristic of the policy and its services. First, the CIPI founded an institutional diversity committee for early childhood, with the support and participation of specialists from all government sectors. Second, to ensure genuine involvement of diverse communities in the process, they developed a policy planning exercise with 13 ethnic minority and indigenous communities of the country who end up in the Modalidad Propia conception.

The methodology for this policy planning exercise included four phases (Fig. 3.2).

1. Agreements through collaboration between the government and the community to define their own methodology approach: who is going to participate, when, and using which strategies?

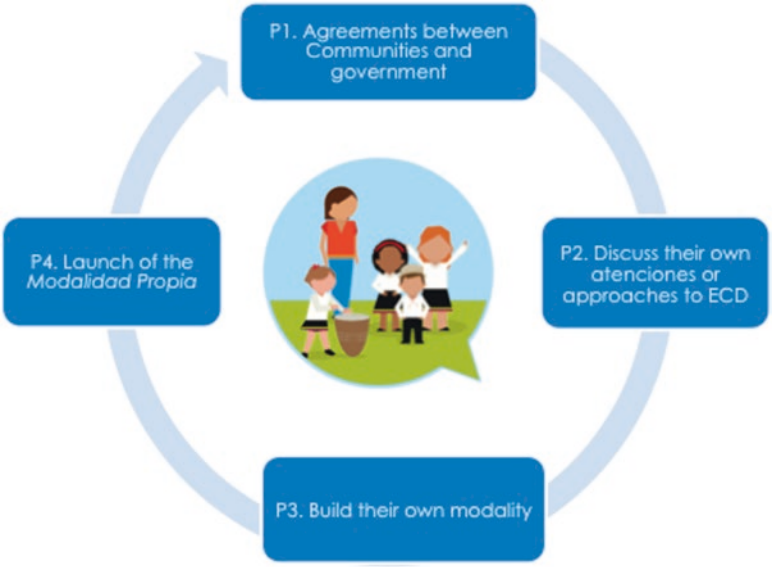

Fig. 3.2 Phases to build Modalidad Propia

2. Discussion of the specific atenciones or approaches to ECD services. To identify the way the RIA's atenciones form a part of the children's daily lives and routines, as well as to identify additional atenciones and any tension in the relationship between the atenciones and their real-life applications in the communities. The product was the RIA contextualized for specific communities.
3. Build their own modality, *Modalidad Propia,* that is, define their approach to quality and the content and strategies of each service component. The product is an operational plan that includes identification of which children are going to be part of each service.
4. Launch of the *Modalidad Propia* (define the technical assistance approach from the federal government; define the community's own monitoring processes and evaluation of implementation). Governance is integrated through a supervisor team from the community to oversee implementation of the defined agreements, as a form of accountability and monitoring.

During the whole process, the government implemented strategies to ensure the quality for the implementation of the methodology. First, they insured that there would be a meeting to agree on the identification of community leaders; for the communities to explicitly define their expectations, objectives, and final product defining their version of the RIA; and to establish implementation processes. Second, service contracts were established directly with the communities as a way to create a binding federal-to-local connection and give autonomy to the community (including flexibility in the way that activities are planned and the budget defined). Third, an external team was hired in the capital to accompany the community process(one professional for every two communities). Fourth, the government organized national meetings

across the participating communities (12 of them) so that they could share their experiences and advances and receive mutual input and feedback on the process.

This methodology responded to a set of principles that guided this work to ensure that the voice of the communities, their experience and knowledge of their territory, and their children were included as a fundamental aspect of the process. This approach built trust, allowed for flexibility, treated communities as experts and decision-makers in their own lives, and enabled the federal government to learn from these experiences.

In the end, the *Modalidad Propia as a service modality* was designed as a culturally specific and responsive approach to ECD that focuses action on a) cultural strength and full community participation and b) closing the gap between government services and community livelihoods and daily routines. This gap has been noted by many in the area of culture and human development as a shortcoming of policies that assume universal relevance of particular intervention approaches for children and families within the country (Brouwers 2017; Koller and Verma 2017; Medin and Bang 2014; Weisner 2002).

We now turn to a specific example of the development and implementation of the Modalidad Propia by and for a specific indigenous community in Colombia.

The Kamëntša Community Experience: *Jtsatashëntsayam Ngominchengbiam Kabëngbe Juabn, Nemoria Y Bëyan* (“Sow Thinking, Words, and Law of Origin in Kamëntšachildren”)

The Kamëntša community is a Colombian indigenous group who have lived for millennia in the Sibundoy Valley, which means “our sacred origin place, where we start and where we end (or arrive).” The Kamëntša “yentšang KamëntšaBëyán” means “people from here with their own thinking and language,” defining their own methodology for building *Modalidad Propia*.

The Kamëntša community lives in rural areas, in extended families. They harvest for use at home and for commerce and also produce animals for milk and meat. Drinking Yage, made from the *ayahuasca* vine, is a central ritual for the life of the Kamëntša community – it shows them the way and helps them to make decisions (they call it “remedio”– healing advice).

The following shows how the Kamëntša community implemented each of the steps in the methodology. The fourth step of the methodology is not described given that it is still in the process of initial implementation as of this writing.

1. **Cooperative Agreements Through Collaboration**

Hand in hand with leaders and local authorities, the Kamëntša decided to enrich the four-phase national methodology described above with their own traditions of reaching agreements as part of the culturally specific process.

The name of the methodology the Kamëntša applied is called "the way to follow" or Bëngbejuabn. It is founded in the origins of their people and builds from daily life. The process of defining the modalities of ECD services utilized this community's oral approach to build agreements through discussion: to talk, to listen, to understand, and to come to an agreement in a natural way between time and space. Based on this approach, members of the Kamëntša community, together with the accompaniment of the federal government's external team, defined the timeline, methodology, and products expected.

2. Discuss ECD, Including *Atenciones* and Services

The Kamëntša gathered in community-wide meetings to define the specific aspects of their cultural vision that related to ECD. They reviewed the RIA national instrument based on these values and traditions.

- They included new *atenciones* based on in their life cycle and practices that allow children to live in a harmonious way and to develop adequately (Fig. 3.3).
- They reviewed the way national atenciones should be displayed based on their traditions and livelihoods.

3. **Build the *Modalidad Propia***

Kamëntša then designed their *Modalidad Propia,* organized by the following questions. The questions are based on the quality components, and their answer involves the discussion about quality, which ultimately contributes to the national discussion on quality standards in De Cero a Siempre.

What are the goals and values that inform the Kamëntša own modality for ECD? The culturally specific modality for early childhood in the Kamëntša community strives to bring to bear all their cultural heritage to promote the development of

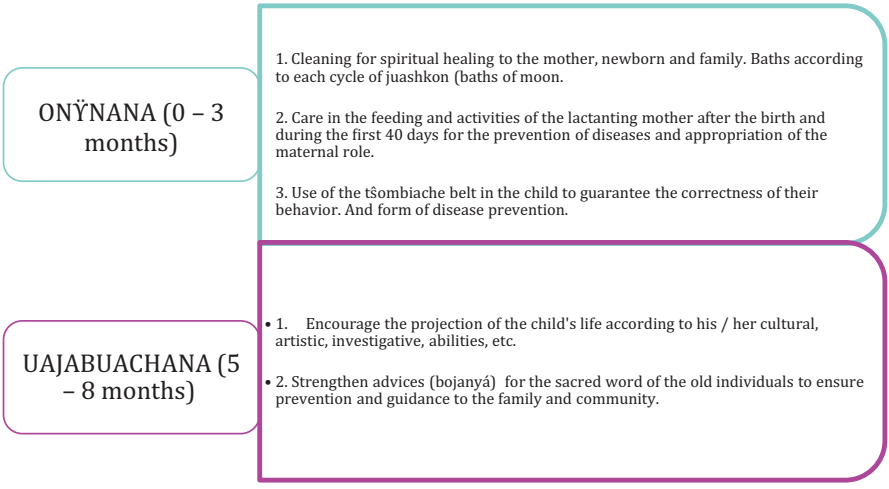

Fig. 3.3 New atenciones of the *Kamëntša* communities

children, based on the practice of the three aims of life, ukuatjonëngjuabn (thinking of old people), nemoria (origin), and bëyan (language) during the individual and collective life course, based on their own pedagogies and livelihoods.

Their cultural heritage is represented by the value of the ancients and their knowledge and continuity in encounters with the elderly, who know about the land, plants, and the way people should treat each other. Other key aspects of the cultural heritage that were identified included promoting orality and language through the value of history and advice as the basis of community life, the value of the intergenerational interchange to strengthen the collective memory and harvest in children life, and the autonomy of community to manage their territory and build it as a safe place for children.

In what settings will the atenciones be provided? The *Modalidad Propia* of the Kamëntša allows children to understand, live, and produce their territory, by taking place in the following:

Jajañ,tjañ (the forest), tëjok (the mountain), and fshajay (the river) include sacred places. These are places where children can interchange spontaneously through the accompaniment of their families, while their parents do their daily activities. United family and community bonds are created in places of traditions and customs where the wise interact with the community and where the ebionëng (ancient doctor), juajuanëng (midwives), and tsbenayëng (craftsman) interact with children and families to transmit their knowledge.

Who should lead the implementation of Modalidad Propia? The components of the community's leadership team were identified, based on their culture and the important people in their communities to raise children. This represents this community's instantiation of the interdisciplinary service teams central to the intersectoral De Cero a Siempre policy. The Kamëntša's own modality thus has staff comprised of:

- Spiritual guide: The guide gives advice, orients, teaches, and promotes healthy spaces through spirituality. The guide promotes encounters among families, children, and modality staff for spiritual healing.
- *UANA TSANA*, coordinator: Acting like a liaison "in between" cultures, the coordinator makes possible harmonious communication between traditional authorities, communities, and government. This person is aware of quality and the quality standards of the service and can serve as a bridge across the discourses of the Kamëntša and policy communities.
- Midwife (Juajuana). Wise woman, who knows about medicinal or healing plants. She guides mothers and fathers in the practices needed to raise a child. She does prevention and protection rituals in accordance with the moon's phases.
- Psychosocial *TJËMBAMBNAYA*. These individuals serve a strong communitarian feeling and purpose. They integrate family and the children's learning process with all community's activities.
- *ABATAMBAYENG*, teacher. Helps to build engaging and challenging learning activities for children. The teacher also knows how to follow up the children's development.

- Wise person in the Kamëntša arts. This person is the one in charge to relate children with their own art traditions, e.g., weaving, knitting, other artisan work, and music.
- Health and nutrition professional. This person holds the knowledge about nutrition in terms of the community's traditional foods and also in a dialogue with new foods introduced from outside the community. This person also helps families with nutrition problems.

How will family and community engagement occur? Family and community participation is one of the most important issues for the Kamëntša Modalidad Propia. Some examples of these practices that were decided upon include:

(A) Mingas for communities and collective work,[1] which are community-wide efforts to work together for a common purpose and build the collective; for example, the entire village works together to build a house or to make a new harvest. These become important events within which to present children to community work and communitarian values and sources of learning through intent participation (Rogoff 2003).
(B) Being part of village celebrations, such as the "day of ancestors" when children learn the value of giving and not expecting anything in exchange, and learning about forgiveness and the power of apology. These are actions that are intended to help children to grow in harmony with themselves and others.
(C) Tours of the Kamëntša lands. This was considered a strategy for children to come to know their land/territory, by walking through it with their families; helping them walk and observe their land became an approach to explore nature and learn through play, one of the principles of learning in De Cero a Siempre (CIPI 2013).

These approaches to community engagement were built on the premise that the Kamëntša see that the staff in ECD linked to De Cero a Siempre are helping children to actively participate in the daily life of their communities and that they are also using daily routines, customs, and the land to promote abilities in children such as wisdom and care for others.

What practices should be promoted for better health and nutrition? To the Kamëntša community, health is an extremely important part of their life; in their worldview, the relation between human and nature, and the way body is related with spirits, is holistic and related to the existence of harmony. Health is a collective enterprise and includes the care of nature. Their Modalidad Propia includes practices whose main objective is to guarantee harmony in all these relations. Some of these traditional practices that promoted emotional, physical, and spiritual development of young children are the following: Yage ceremonies, a base to the spiritual training and to the family and communitarian balance and harmony; intercultural daily menus, which integrate preparation of the community's traditional foods in ECD service spaces; and home vegetable garden, which enables children to assist in and learn from their families' and communities' daily feeding.

[1] Mingas are meetings of the entire community.

What is the pedagogical/curricular approach to learning? The pedagogical approach and curriculum place all of the community's own atenciones in a cohesive framework that defines young children's activities and their intended outcomes. This framework is intended to help ECD staff to define the pedagogical planning and the follow-up activities for children.

Learning activities incorporate pedagogical approaches appropriate to specific developmental stages. Pedagogical axes include territory, own art, Mother Earth, and language and ancestral thinking. An example of the application of these axes to pedagogy and curriculum follows.[2]

	Pedagogical axes and activities			
Life course of children	BËNGBE LUAR territory	TS̈ BENAYAM own art	TSBATSANA MAMÁ Mother Earth	OYBUAMBNAYAM ANTEO JUABNAK Language and ancestral thinking
SHEKBUACHA from 1 year and 3 months	Walk the territory with children and families	Recognize the own art through exploration and handcraft with the traditional materials	Work on the the Chagra (food home gardens) with children	Had meetings of advice from the old Kamëntša people
	Tell stories about FSHANTS: the birth and death of Kamëntšä	LUARTESKAM: work with traditional melodies Kamëntšä to explore movements and be sensitive to nature	Start to recognize sacred and medicinal plants	Teach in their own language the names and relation between colors and nature
	Work on the value of the house as the first territory	BËTSKNATE: organize community's own celebrations. All through movement, exploration, and expression	Tell stories about the importance to take care of plants and nature for health and healing	
	Share through play to become part of a community		Visit sacred places to perform rituals and understand the healing uses of plants and the importance of aliments	

[2] This is not completed work but shows the potential of the Kamëntša curriculum and a tool for the follow-up and continued monitoring of children's learning and development.

Thus, the Kamëntša communities defined the structure of ECD services along pedagogical axes, defined associated activities and interdisciplinary staff, and integrated their own values and traditions in their version of the Ruta Integral de Atenciones of De Cero a Siempre. This occurred through a process of working hand in hand with local governments in order to define relevant services within the De Cero a Siempre framework.

Discussion

Modalidad Propia is an example of a comprehensive process to build local perspectives into public policy. The "own modality" has several features that make it unique, relative to other efforts to integrate culture into ECD programs and policies. For example, in New Zealand the Te Whariki approach built their national preschool curriculum on Maori traditions and practices (Carr and May 1993). In East Africa, the Madrasa model of preschool education of the Aga Khan Development Network blended traditional values of Islam concerning child development with the global evidence base on developmentally appropriate practices in preschool education, with high levels of local community governance and engagement (Mwaura and Marfo 2011). Many other examples exist of specific programs (not policies) that have been designed with a basis in local community daily routines and practices, rather than global approaches to ECD services. However, unlike such previous models, the *Modalidad Propia* is a general model within a national public policy that can be applied to multiple cultural communities in a country; covers all sectors of services within a comprehensive, intersectoral approach; and therefore proposes a scalable process to recognize cultural qualities of communities to promote ECD.

The aim of *Modalidad Propia* is to make services within a national policy more relevant to the cultural diversity of a country, specifically by ensuring that some dimensions of quality are locally discussed. *Modalidad Propia* facilitates a series of community discussions centered on some concepts of public policy. Emerging strengths and challenges identify some relevant debates and discussions such as the role of livelihoods as a central definitional construct of a particular community; the participatory perspective in public policy development and implementation; the cultural tensions among elements of the theory of change of a particular program or service, such as mode of service delivery and underpinning cultural values; and finally the context of centralized vs. decentralized governance in national policy relevant to SDG 4.2.

Emerging Strengths of Modalidad Propia

Several strengths of the *Modalidad Propia* are important to note in the context of SDG and national policy implementation. First, the *Modalidad Propia* may be effective in diluting tensions between the conceptualization and implementation of ECD services that are established in a national policy. Social groups are characterized by certain forms of practices, institutions, and identities that build borders to differentiate from others; cultural tension emerges when there is evidence of disagreements that contradict and strengthen at the same time the group's identity.

When government policies are not aligned with some practices that have supported child development in communities, cultural tension can emerge in the ECD services, making them inefficient and irrelevant for children and families. The area of nutrition programming provides one of the best examples of this contradiction. Including products that are not part of children's daily diets or families' daily routines can have an impact on health and adherence to food. On the other hand, local staples may not by themselves provide sufficient nutritional components like protein. In another example, some indigenous community leaders in Colombia expressed the belief that children should not attend centers in an ECD service until the age of 7 years, because children should be with their family in their daily activities and spend time with the elders of their communities. However, national quality standards placed restrictions on the use of community settings as a learning environment because of regulations regarding moving children out of centers during hours of service provision.

Through its central participatory emphasis, the *Modalidad Propia* is an effort to work through such cultural tensions in ongoing dialogue between representatives of the national government and various stakeholders in indigenous, rural, and remote communities. The process can meet the goals and principles of SDG Targets 4.2 and 4.5 to address the stated needs for care and attention of all children and the specific needs of indigenous or other ethnic groups. At this point we must recognize that all practices for human development are culturally based, including "mainstream" practices that are promoted by national curricular and policy frameworks and assumed to apply across all communities within a nation (Brouwers 2017).

Second, the *Modalidad Propia* provides a pathway to challenge the industrialized "factory" process of learning, by understanding children in social life and as a part of a local culture. Correa-Chávez and Rogoff (2009) note that there are some approaches that separate children from adult community activities and situate them in particular settings designed exclusively for them, such as schools and daycare settings, which in turn structure communication differently. These have been referred to as the beginnings of the "factory" or "assembly line" approach to structured learning associated with overly simplistic Western models of schooling (Rogoff 2003).

Modalidad Propia, in contrast, has the potential to introduce new practices into the childhood and parenting discourse at the national level, driven by the question: What is the function of programs and services in the daily life of communities? This intersection of public policy, culture, and community life has been understudied in developmental science (Ball and Pence 2006; Bernheimer and Weisner 2007; Lowe

and Weisner 2004; Mwaura and Marfo 2011; Serpell 2011). *Modalidad Propia* is one of the few instances of a nationally scalable process developed in a way that can integrate values, goals, and culturally specific practices for child development of any cultural group, whether mainstream or "minority." In fact it can and should be applied to problematize the "mainstream" assumptions of the core pedagogical approaches of a national policy like De Cero a Siempre. In this way, the assumption of culturally specific practices being only applicable to minority communities could be challenged productively.

Third, the Modalidad Propia may balance tendencies toward centralization vs. decentralization in national early childhood policies. Even though Modalidad Propia recognizes the cultural characteristics of communities and is based on a participatory exercise, there were some elements that have to remain centralized and others decentralized to ensure that the exercise fits into the national policy framework.

In Modalidad Propia, the Colombian government has maintained the structure of the eight *atenciones* and quality components of De Cero a Siempre but opened the possibility to discuss the quality standards and develop local instantiations of the *atenciones*. For example, in the Kamëntša experience, they define an intercultural team, a specific version of the interdisciplinary teams required in De Cero a Siempre at the national level (typically a nutritionist, an instructional coordinator, and a person responsible for psychosocial support).

They also maintain the national instrument of the RIA but give the communities the possibility to integrate it with the content of local practices. The Modalidad Propia intends to enable the national policy instrument (RIA) to be used not only by government institutions but also by communities, an instrument that allows communities a better understanding of how they are raising their children, what they should do to strengthen, what they do best, and what they should work on or change.

The interaction between centralized and decentralized strategies in public policy is also represented in the external teams from the central government that accompanies the indigenous, rural, and remote communities in the building process to engage communities. The process of policy implementation is therefore conceptualized as a reciprocal process of learning and development between local communities and the central government. Instead of the "top-down" communication structure that is often implied by the implementation of national quality standards, for example, there is an avenue for the central government to learn about potential sources of innovation for the national policy. For example, the national government might consider the role of elders in the interdisciplinary teams that support Centros de Desarrollo Infantil.

Fourth, the *Modalidad Propia* is an example of participatory governance in national policy implementation. It recognizes people from often marginalized indigenous and rural communities as experts of community and family socialization and early childhood development (ECD) as a possibility to generate collective action, civic engagement, and social capital in the process of defining and implementing *Modalidad Propia.* Scalable elements include the building of cooperative agreements and aligned expectations. The agreements are a bridge between the government and

the community's commitment to promote children's rights. They also include a scalable process across diverse communities in a country for discussion of its quality, its definitions, its applications in the local context, and its quality measurement and monitoring mechanisms (Yoshikawa et al. 2017).

Rather than adapting evidence-based practices to local communities, or training staff in culturally competent service provision (two dominant approaches to contextualization of services in North America), *Modalidad Propia* starts from the often centuries-old approaches of communities to raise their own children in a culturally pertinent way and then introduces discussions about how to include new practices, taking into account their livelihoods and daily routines as a key point. The process begins with cultural strengthening of local practices and then builds cultural competence bridging to the policy standards and goals, rather than starting with staff from the mainstream group and building their cross-cultural competence to "minority" communities. For example, the process takes into account community livelihood and routines (e.g., harvesting and preparing food) to promote the participation of children and the possibility to link daily life with public services.

Finally, *Modalidad Propia* strives to integrate transparency and accountability with access to resources. These kinds of experiences are based on democratic values that could be promoted in all democratic systems. *Modalidad Propia* aspires to deepen the ways in which people can effectively participate in and influence policies that directly affect their lives. In this respect it is a form of participatory governance and democratic processes that have been implemented across Latin America (e.g., the well-known example of Porto Alegre in Brazil, which has been replicated across the region with varying success; Novy and Leubolt 2005).

The pitfalls of participatory governance include the fact that participatory discussions can sometimes fail to result in actual follow-through or impact on resources or implementation of policy. In this respect the *Modalidad Propia* addresses some of these pitfalls by producing concrete policy products that include specific definitions of services and curricular content, to which the community holds itself accountable for. Administrative processes that accompany the visioning, goal setting, and service definitions to build governance capacity are also encouraged. This is to ensure that implementation and follow-up actually occur.

Challenges Facing Modalidad Propia

In these ways, the design of the *Modalidad Propia* intends to advance beyond typical inclusion of diversity in public policy by including aspects of participation, governance, and staffing in a scalable process. Nevertheless the Colombian government experiences many challenges in the implementation of the modality, including evaluation and the actual scaling-up of the process without losing the main strength of the experiences in order to do some standardization.

The modality to date is being implemented by 12 different ethnic communities of Colombia. It has become an extremely popular perspective within these communities.

Nevertheless the incentives for additional communities to participate must be considered (there are upward of 110 different language groups in the country of Colombia). As a voluntary process, the *Modalidad Propia* may be rejected by certain communities. What are the consequences? Will such communities be held accountable to quality standards that may be inappropriate from the perspective of local practices?

On the other hand, the very popularity of the *Modalidad Propia* in diverse communities could propagate a soft intervention of the model without the institutional processes that can hold the modality accountable. Before implementing its expansion to the rest of the country, an evaluation process should be designed for the *Modalidad Propia* that assesses the modality's development in each community, as well as its operation, implementation, and impact. Evaluation designs should consider how to measure the quality of this kind of modality and how to include the communities' own outcomes, within the larger system of quality monitoring and measurement of the De Cero a Siempre policy (e.g., Ministerio de Educación Nacional 2016). For such research, cutting across notions of culture, context, and policy implementation, a rich set of interdisciplinary methods are required across the social sciences (cf. Yoshikawa and Currie 2011; Yoshikawa et al. 2008). Such evaluation and implementation of *Modalidad Propia* should not focus only on indigenous, rural, or Afro-Colombian communities but should be part of the right of all populations in the country to decide and participate in the public policy designs and the way services should implement.

The evaluation of *Modalidad Propia* should also track public spending to assess the efficiency of the modality (the balance of cost and impact on family and child outcomes). This may include the consideration of finance and costing mechanisms and support for them at the level of each community (Britto et al. 2014; Yoshikawa et al. 2017).

Finally, it is urgent that the government defines the methodology of the process based on the different experiences of communities and systematizes it in a timely and cost-effective way. Scaling of the process nationally to the diverse ethnic and language groups of Colombia should be made possible in a matter of years, not decades.

Conclusion

The Sustainable Development Goals' combined emphases on universality, equity, and quality (cf. Target 4.2 but also other goals and targets related to human development) require a flexible integration of community, cultural, and policy specificity. We have discussed in depth an example of one country to design a process that honors the specificity of culture in the implementation of national policy for child development. The principles underlying *Modalidad Propia* may be useful for other nations implementing public policy with attention to equity and quality for all.

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Chapter 4
Early Childhood Development Programs, Peacebuilding, and the Sustainable Development Goals: Opportunities for Interdisciplinary Research and Multisectoral Partnerships

Liliana Angelica Ponguta, Chelsea Donaldson, Friedrich Affolter, Paul Connolly, Laura Dunne, Sarah Miller, Pia Britto, Rima Salah, and James Leckman

Introduction

Peaceful societies are the cornerstone of sustainable development. Today, we face the challenge of achieving peace in light of conditions of vulnerability that drive social and economic instability and often promote conflict and violence. The latest developmental science indicates that grave risks affecting the developmental trajectory of millions of children today could majorly hinder our progress toward sustainable development and peace (Leckman et al., 2014). In this chapter, we argue that early childhood development (ECD) programs that directly engage caregivers and children, as well as their communities and institutions, can be leveraged to

The information contained in this document expresses the authors' personal views and opinions and does not necessarily represent positions of the organizations they are currently employed with.

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contribute to peacebuilding[1] efforts. This can be achieved by promoting social cohesion, individual and community resilience, and economic productivity, ultimately contributing to preventing violence and promoting peace.

Linking ECD programs to larger issues of social transformation, conflict, and peace in the context of sustainable development has rarely been of as much importance as it is today. The Organization for Economic Cooperation and Development (OECD) predicts that in 2030 nearly two thirds of those living in poverty will inhabit fragile countries (OECD, 2014). Furthermore, young people (who are also future parents) will double in number in those countries, while the rate at which population numbers double is twice as fast (OECD, 2014). Additionally, an astounding 250 million children in low- and middle-income countries (LMICs) under the age of 5 may not reach their developmental potential (Black et al., 2017). Together, these trends pose threats to human development and increase the risk of violent conflict, thus hindering progress toward sustainable development and peace.

Although social services are now recognized as integral aspects to peacebuilding and ECD is being recognized as a driver of the transformations proposed by the Sustainable Development Goals,[2] the next generation of security and sustainability issues requires a more comprehensive understanding of the underlying social drivers of conflict (Peacebuilding Support Office, 2012). Strong social services that are provided on an inclusive and equitable basis can decrease the probability of conflict and inhibit insecurity (Clarke, 2016). For instance, the likelihood of violent conflict is likely to decline by 37% in at-risk countries with greater gender education equality (FHI 360 Policy and Data Center, 2015). In particular, we need a thorough conceptualization of how ECD programs can be leveraged for peacebuilding before, during, and after conflict and instability, not only to protect children and their caregivers from the consequences of conflict but also to contribute to the mitigation of future conflict.

ECD is the period of development from prenatal to 8 years of age (or when children enter the primary school cycle) (The Consultative Group on Early Childhood Care and Development, 2012). This is a highly sensitive period of development where, among many cognitive and behavioral domains, important foundations for socioemotional development and prosocial behavior are established (Britto et al., 2017). Skills that include cooperation, empathy (or the ability to respond affectively to emotions in others), and other related abilities start developing very early in the home and school environments (Rieffe et al., 2010). Early childhood programs can serve as good entry points to promote skills (respect, tolerance, conflict resolution) that are precursors to future positive relations.

To ensure optimal development, young children need a nurturing environment, which includes health, nutrition, safety, early learning, and responsive caregiving (Britto et al., 2017). Because of the holistic nature of ECD, it is crucial to consider

[1] In this chapter we make use of the word peacebuilding and use it interchangeably with *sustaining peace.*

[2] Ban Ki-Moon, "United Nations General Assembly, side event *Meeting of the Minds*" (New York, NY, September 22, 2015)

the risk and protective factors that affect children in different contexts and acknowledge the role of these factors as determinants of developmental trajectories. We argue that investing in quality ECD programs as a contribution to peacebuilding is necessary in situations of acute distress (such as conflict, war, postwar, displacement, or natural disasters). However, investing in ECD is also greatly needed in seemingly stable societies affected by risks that prelude visible violence and social instability, such as inequality, poverty, discrimination, etc. (Galtung, 1969; Dawes and van der Merwe, 2014; Punamäki, et al. 2014; Connolly et al., 2006; Chaudry et al., 2017).

Context, timing, and dosage of bioecological risks play a role in determining the net effect of risk and protective influences on the child (Bronfenbrenner, 1979; Wachs and Rahman, 2013). *Bioecological risks* are a complex set of contextual influences that threaten a child's ability to develop cognitive, socioemotional, or physical trajectories (Krishna Kumar and Black, 2002; Sameroff and Rosenbloom, 2006). The *dosage* refers to the intensity and/or frequency of exposure to bioecological risks, while the *timing* refers to the period during the child's development when exposure occurs. Depending on the context, *preventative strategies* can maximize protective factors against bioecological risks, while *intervention/treatment strategies* can mitigate negative effects of risk exposure. The overwhelming prevalence of bioecological risks in the current global landscape can have long-lasting effects on children which can even transfer on to future generations (McEwen and McEwen, 2017). We propose a framework of ''peacebuilding through ECD'', which includes risk-informed policies, programs, and research that take into account the environments where children grow.

The aim of this chapter is twofold: (1) to present evidence that substantiates the links among ECD programs, sustainable development, and peacebuilding while guided by the Global Peace Index[3] framework and (2) utilize this evidence to build a theory of change to guide research, program, and policy, with the purpose of leveraging ECD programs for peacebuilding and sustainable development. More broadly, we aim to bring attention to the need to complement peacebuilding approaches that focus on security, economic, and government reform and recognize social investment (centered around young children and families) as a strategy that contributes significantly to the transformation of interpersonal and intergroup relationships, equality among groups, and economic productivity.

[3] The Institute for Economics and Peace (IEP) provides measurable domains as part of the Global Peace Index that are used to quantify each country's progress toward peace. The specific indicators are detailed subsequently in this chapter.

Links Among ECD, Sustainable Development, and Peacebuilding

Our ‘‘peacebuilding through ECD’’ framework is founded on the interconnections of ECD, peacebuilding, and sustainable development, which are anchored in the interdependence among human development, resilience, conflict prevention, and social and economic development established among others by the United Nations (United Nations General Assembly Security Council 2001). As noted by the UN’s Sustainable Development Knowledge Platform, “there can be no sustainable development without peace and no peace without sustainable development” (United Nations, 2015). In fact, in 2009 the UN Secretary-General highlighted the provision of social services as one of the five priorities following conflict to address peacebuilding (United Nations, 2009). Multilateral organizations, including the World Bank and the OECD-DAC, have articulated similar priorities (UNESCO, 2008; Pathfinders for Peaceful, Just and Inclusive Societies, 2015; World Bank, 2017, 2011; Peacebuilding Support Office, 2012).

The connection between ECD and sustainable development has been well established from both developmental science and economic perspectives. ECD is directly recognized in Goal 4.2 in the UN Sustainable Development Goals (SDGs), which aims to increase access to quality ECD programs for all children. In fact, ECD is transversal to all Sustainable Development Goals. For instance, healthy development in early childhood predicts health, education attainment, employment outcomes, and social behaviors later in adulthood, thus supporting the achievement of SDG 1 (reducing poverty), SDG 3 (health), SDG 4 (education), SDG 8 (employment and economic growth), and SDG 16 (achieving peace and justice and reducing violence) (Center on the Developing Child at Harvard University 2007; Daelmans et al. 2017; Early Childhood Peacebuilding Consortium 2017). Furthermore, participation in quality ECD programs leads to life-long learning and productivity for participants from vulnerable groups and results in high societal returns on investment, which provides strong evidence that ECD investments can also contribute to SDG 8 (economic growth) and SDG 10 (reduction of inequalities) (Heckman 2006; Britto et al. 2017; Sustainable Development Solutions Network 2014).

Evidence on the links between ECD and peacebuilding has emerged relatively more recently. Conceptual frameworks formulated over the last few years linking ECD and peacebuilding follow a multicomponent logic, whereby the biobehavioral patterns of the individual child are interrelated with macroeconomic, social, and family contexts (Yale University and the ACEV Foundation, 2012; Leckman et al., 2014; Early Childhood Peacebuilding Consortium, 2017). Studies show that foundations of healthy social interactions are promoted early in life, and early attachment and parental support can lead to better socioemotional outcomes in children, reduction of anxiety in parents, and positive parenting practices, among other outcomes (UNICEF, 2013; Christie et al., 2014). For instance, healthy and appropriate physical, cognitive, and socioemotional development in early childhood are predictors of health, education, and employment success and prosocial behaviors

later in adulthood (Blair and Razza, 2007; Duncan et al., 2007; Emde and Robinson, 2000; McCartney and Phillips, 2006; Shonkoff et al., 2009). ECD programs that improve the developmental outcomes of vulnerable young children can contribute to building human capital (improve health, education, and employment outcomes) and social capital (improved social relations) in adulthood, increased equality among groups, and have been associated with decreased incidence of violence and crime (e.g., Heckman, 2006; Leckman et al., 2014; Reynolds et al., 2007). More recently, the UN General Assembly's 72nd regular session adopted its annual resolution on "Follow-up to the Declaration and Programme of Action on a Culture of Peace" (document A/72/L.30 and Add.1) by consensus.[4] The Assembly called for age-appropriate education to include concepts such as mutual understanding, tolerance, active and global citizenship, and human rights. ECD was also recognized as a key contributor to the development of more peaceful societies.

We hypothesize that an important outcome of ECD programs linked with peacebuilding is their contribution to strengthened social cohesion. There is a discrete body of evidence to suggest that ECD programs can increase social and human capital of caregivers and improve intergroup social relations in the shortterm (e.g., Connolly et al., 2007; UNICEF, 2013). For example, results of a cluster randomized trial in Northern Ireland indicate that a preschool program focusing on promoting respect for diversity may lead to greater awareness and self-efficacy among parents and practitioners, which can in turn serve as a foundation to promote positive intergroup relations (Connolly, et al. 2010).

Drawing from the above connections, we conducted an expert consultation to gather illustrative examples of evidence linking ECD programs to peacebuilding and sustainable development.[5] It is important to note, however, that a wealth of less well-known but important work might be uncovered using a more systematic approach. Our analysis was guided by two globally recognized frameworks: (1) Galtung's conceptualization of negative and positive peace, which was utilized by the Institute of Economics and Peace (IEP) in creating measurable peace indicators for the Global Peace Index (IEP, 2015), and (2) the United Nations, SDGs. Given that defining and measuring "global peace" are challenging, we used the IEP's peace indicator framework to demonstrate how outcomes of ECD programs can contribute to globally recognized metrics of peace. We did this also, in part, because it is imperative for developmental science to align with globally recognized terminology and conceptualizations emerging from the peacebuilding field.

The IEP provides measurable domains that are used to quantify each country's progress toward peace, which include both positive and negative peace indicators (IEP, 2015). *Positive peace* encompasses the "societal attitudes, institutions and structures that create and sustain peace," which includes eight domains ("pillars")

[4] The Resolution is now formally numbered as A/RES/72/137, was adopted in 2017, and can be accessed in the following link: http://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/72/137.

[5] Experts included members and technical advisors of the Early Childhood Peacebuilding Consortium.

that categorize the relationships between positive peace and measurable social, economic, and political constructs (IEP, 2015, p. 8). The positive peace pillars include the following: well-functioning government, sound business environment, acceptance of the rights of others, good relation with neighbors, free flow of information, high level of human capital, and low levels of corruption — all of which consist of measurable indicators predictive of achieving each peace pillar (e.g., "GDP per capita" is an indicator under the "sound business environment" peace pillar). *Negative peace* refers to "the absence of violence or fear of violence" and includes 23 indicators demonstrating a country's progress toward negative peace that are organized into three domains: ongoing domestic and international conflict, societal safety and security, and militarization (IEP, 2015). Table 4.1 shows ways in which landmark ECD programs can contribute to the attainment of specific positive and negative peace indicators that are measurable in the short and long term. We provide a few salient examples of well-known programs and studies (reviews and position papers, empirical studies, and/or case studies) that support these links. It is important to note that not all of the studies reviewed were conducted in LMICs and it cannot be implied that effects reported in these selected studies will be transferable between contexts. Additional research is needed to know whether what works in one country context (LMIC or otherwise) will have the same effects in another context. It is also important to note that ECD program outcomes and positive and negative peace indicators and the SDGs are deeply interconnected. Figure 4.1 shows some links established, which are not exhaustive but rather illustrative.

Theory of Change: Proposed Inputs, Activities, and Outcomes of Peacebuilding Through ECD

Despite evidence linking ECD and peacebuilding, global and national initiatives that effectively co-operationalize them are only recently emerging. For instance, a recent systematic review of early childhood development and peacebuilding policies across 14 conflict-affected and post-conflict countries found scant connections between ECD and peacebuilding policies (Ang and Oliver, 2015). The review concluded that there is very limited recognition in national policies of the potential of ECD for peacebuilding efforts. Researchers, practitioners, and policymakers face the challenge of shifting this trend toward one that effectively positions ECD as one of the building blocks of peace and sustainability. Although our overview presents a compelling set of evidence linking ECD to positive and negative peace measures, it cannot be assumed that addressing child risk factors and providing family-level programs will necessarily lead to a reduction of structural violence, inter-community or international conflict resolutions (Morgan et al., 2014). However, we argue that the social fabric of peace starts with individual actions and a person's ability to be empathic and connected to the social context in a constructive manner. We also highlight the power of ECD as a "social equalizer" and a mechanism to reach social cohesion, which are two precursors of conflict prevention and peace promotion.

Table 4.1 Indicative examples of ECD programs and interventions: links to global peace indicators and the SDGs

Illustrative ECD intervention and program outcomes	Links of ECD program outcomes to positive and negative peace indicators
High/Scope Perry Preschool Program	Increasing employment rates and educational attainment of beneficiaries linked to positive peace indicators: GDP per capita, population living below $2/day, and Gini coefficient
Context: USA, low-income families	
Adults at age 40 who had participated in a high-quality preschool program and family support services had higher earnings, were more likely to hold a job, were more likely to have graduated from high school, were sentenced to fewer months in jail/prison, and were less likely to be chronic lawbreakers or convicted felons at age 40 (Schweinhart et al., 2005)	Outcomes of the evaluation are linked with negative peace indicators: level of violent crime and number of jailed population per 100,000 people
Analysis of a representative sample of preschool-age children	Improving educational outcomes is linked to positive peace indicators: youth development index and secondary school enrolment
Context: Uruguay	
The study explored the effects of pre-primary education on school retention and levels of completed education. Analyses showed that by age 16, children that attended preschool were 27% more likely to be in school compared to their siblings with no preschool education and accumulated more than 1 extra year of education (Berlinski, et al. 2008)	
Early childhood nutrition intervention	Increased wages and educational attainment of beneficiary children linked to positive peace indicators: GDP per capita, population living below $2/day, Gini coefficient, youth development index, and secondary school enrolment
Context: Guatemala, low-resource communities	
Children who were given a nutritional intervention in childhood had 46% higher wages in adulthood (Hoddinott et al. 2008) Additionally, participation in the intervention led to increased grade attainment by women via increased likelihood of completing primary school and some secondary school (Maluccio et al., 2009)	
Nutrition and psychosocial stimulation program	Increasing employment rates and educational attainment of beneficiary children is linked to positive peace indicators: GDP per capita, population living below $2/day, and Gini coefficient
Context: Jamaica, stunted children	
Children who participated in a psychosocial stimulation and nutrition program, which involved parental education, showed that children assigned to the intervention group achieved higher earnings 20 years later after participating, compared to the control group. Earnings from the treatment group equated those of a matched non-stunted comparison cohort (Gertler et al., 2013) Longitudinal data from the study have also shown lower rates of violent behaviors among adults who participated in the program, including less involvement in fights and in serious violent behavior (Walker et al., 2011). Participating in the program also led to reduced mental health symptoms (depression, anxiety, externalizing behaviors) (Walker et al., 2006)	Outcomes of the evaluation are linked to negative peace indicator: level of violent crime

(continued)

Table 4.1 (continued)

Illustrative ECD intervention and program outcomes	Links of ECD program outcomes to positive and negative peace indicators
Mauritius Child Health Project	Outcomes of the evaluation are linked to negative peace indicator: level of violent crime
Context: Mauritius	
Children who participated in an enrichment program (consisting of nutrition, education, and physical exercise), at ages 3–5 years, had lower manifestations of antisocial behavior at age 17 years and less incidence of criminal behavior at age 23 years, compared with the control subjects (Raine et al. 2003)	
Public Health Nursing Early Intervention Program	Improving educational outcomes is linked to positive peace indicators: youth development index and secondary school enrolment
Context: USA, low-income adolescent mothers	
A nurse home visitation ECD program in the USA that fostered maternal development in the areas of work, education, and family planning was found to significantly increase levels of education attainment for adolescent mothers who participated in the program (Koniak-Griffin et al. 2000)	
Nurse Home Visitation Program	Improving educational outcomes is linked to positive peace indicators: youth development index and secondary school enrolment
Context: USA, low-income and at-risk families	
ECD programs in the USA that involved low-income and teenage mothers and that focused on enhancing parenting skills have been associated with a range of positive maternal outcomes including increased education attainment and employment, independence from public aid, improved childcare practices, reduced likelihood of abusing children, and reduced rapid successive childbearing (which, in turn, increases maternal independence and availability to work) (results reviewed in Olds, 2010)	Outcomes of the evaluation are linked with negative peace indicator: level of violent crime
Child-Parent Center Education Program	Increasing employment rates and educational attainment of beneficiary children is linked to positive peace indicators: GDP per capita, population living below $2/day, and Gini coefficient
Context: USA, low-income, inner city settings	
Relative to the comparison group (children receiving usual services), children who participated in a child-parent education program showed higher educational attainment, income, socioeconomic status, and health insurance coverage, as well as lower rates of justice-system involvement and substance abuse 25 years after program participation. Specifically, program participation was associated with fewer felony arrests, fewer convictions, and fewer incarcerations (Reynolds et al., 2007)	Outcomes of the evaluation are linked to negative peace indicators: level of violent crime and number of jailed population per 100,000 people

(continued)

Table 4.1 (continued)

Illustrative ECD intervention and program outcomes	Links of ECD program outcomes to positive and negative peace indicators
The Turkish Early Enrichment Project	Improving educational outcomes is linked to positive peace indicators: youth development index and secondary school enrolment
Context: Turkey, low-income families	
A program focused on improving maternal skills was found to improve family relations and maternal empowerment, including increasing equitable communication, role sharing, and decision-making between spouses of opposed ethnic groups. The study also showed that 22 years after participating in the program, children had better developmental trajectories into young adulthood compared to children who did not receive the intervention (Kagitcibasi et al., 2009)	Improving outcomes for females is linked to peace indicator: gender inequality index
UNICEF's Peacebuilding, Education, and Advocacy (PBEA) program	Improving social relations is linked to the positive peace indicator: intergroup cohesion. Improving outcomes for females is linked to peace indicator: gender inequality index
Context: The Ivory Coast, post-conflict setting	
Case studies from UNICEF's Peacebuilding, Education and Advocacy (PBEA) in Conflict-Affected Contexts program implementation (in collaboration with the NGO Caritas Internationalis) in the Ivory Coast found that ECD programs brought together families from conflicting ethnic groups. The resulting improvements in intergroup relationships among parents facilitated the development of interethnic mother clubs that nurtured horizontal social cohesion also among male community stakeholders. Multi-ethnic women's groups (mostly mothers of children attending the centers) succeeded in managing ECD centers that served children of ethnically diverse backgrounds. In addition, ECD centers freed up mother caregiving time that was reinvested in multiethnic women literacy classes, as well as the launch of small-scale income-generating projects to strengthen economic independence of families. The ECD program itself may serve to reduce future inequalities among the children attending the centers (UNICEF, 2014)	Increasing income is linked to positive peace indicators: GDP per capita, population living below $2/day, and Gini coefficient
Media Initiative for Children: Respecting Difference Program	Improving social relations is linked to the positive peace indicator: intergroup cohesion
Context: Northern Ireland	
A randomized controlled trial of a preschool program that centered around a series of media messages which addressed different forms of exclusion (e.g., disability, race, and religion) was shown to have a positive impact on the children's ability to recognize emotions in themselves and others and to recognize instances of exclusion. Participating in the program, which also included training and support for preschool teachers and parents, increased children's willingness to engage in cultural activities associated with the other ethno-religious community. The program sought to encourage positive interactions between preschools and parents across the ethno-religious, political divide in Northern Ireland. This (it is hypothesized) should contribute toward increased horizontal cohesion, although this was not part of the focus of the trial (Connolly et al., 2010)	

Note: Landmark and relevant early education, parenting, home visiting, and nutrition interventions were selected to illustrate how key outcomes of ECD programs are connected to the positive and negative peace indicators outlined in the Global Peace Index (IEP, 2015).

	ECD program outcomes	Related Peace Indicators (from the IEP's 2015 Global Peace Index Report)	Related SDGs
Positive Peace *Societal attitudes, institutions and structures that create and sustain peace*	• Improved physical and mental **health**	• Youth development index	SDG 3
	• Improved **education** outcomes	• Secondary school enrolment • Youth development index	SDG 4
	• Improved **employment** outcomes	• GDP per capita • Population living below $2/day	SDGs 1, 8, 10
	• Improved **social relations** (including healthy social relationships, tolerance for diversity, trust, empathy, etc.)	• Intergroup cohesion • Hostility to foreigners	SDGs 4, 10
	• Increased **equality** among groups and genders through empowerment of vulnerable populations	• Gender inequality index • Gini coefficient (equitable economic distribution)	SDGs 5, 10
Negative Peace *Absence of violence or fear of violence*	• **Decreased violence**	• Level of violent crime	SDGs 5, 16
	• **Decreased crime** and criminal behavior	• Number of jailed population per 100,000 people	SDGs 5, 16

Fig. 4.1 Framework demonstrating the links among ECD program outcomes, peace indicators, and SDGs. Note: *SDG 1:* end poverty, *SDG 3:* improved health, *SDG 4:* improved education, *SDG 5:* gender equality, *SDG 8:* economic growth and improved employment outcomes, *SDG 10:* reduced inequalities, *SDG 16:* peace and justice (including reducing violence)

To this end, and drawing from our analysis linking ECD program outcomes to positive and negative peace, the Early Childhood Peace Consortium (an interinstitutional and international partnership) generated a theory of change to guide research, practice, and policy agendas for "peacebuilding through ECD" (Fig. 4.2).[6] The theory of change considers that the linkages follow different social ecological levels: (1) policy and societal level, (2) community and peer relations, (3) caregivers and family, and (4) the child level. The theory of change proposes that *if* governments, institutions, and organizations design and implement quality ECD programs that take into account conflict risk factors and that intentionally build peace-relevant attitudes, skills, and knowledge in children, families, and governments/institutions in order to contribute to mitigating these risks, *then* this will contribute to the following: (1) increased vertical cohesion (societal trust in institutions) and horizontal social cohesion (societal connections across different sociodemographic groups) and (2) increased economic growth, equity, and sustainable development opportunities across communities. In turn, social cohesion, economic growth, and equity are key prerequisites for violence reduction and peace promotion (Fig. 4.2). Below, we discuss the rationale behind the theory of change's constructs proposed.

[6]This theory of change was jointly formulated in a participatory Early Childhood Development Peace Consortium workshop, held in February 2017. For more information on the Consortium: http://www.ecdpeace.org.

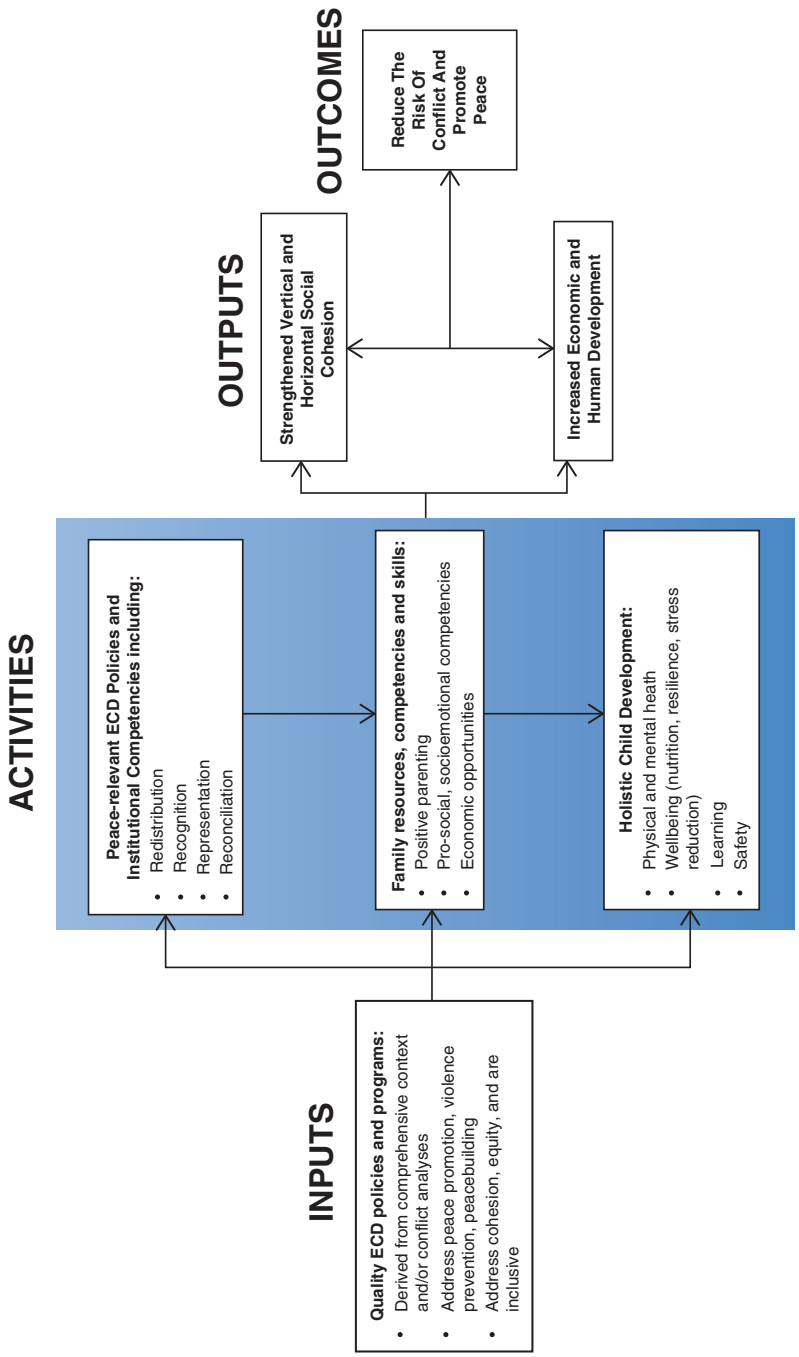

Fig. 4.2 Overarching inputs, activities, outputs, and outcomes of the theory of change for "peacebuilding through ECD"

Key inputs are policies and programs that are derived from comprehensive context analyses (risk and protective factors) and/or conflict analyses (in conflict-affected settings). The policies must contain provisions that are conflict-sensitive and that address violence prevention and peacebuilding as well as promote cohesion, equity, and inclusiveness. These provisions can be explicit (e.g., implemented through peacebuilding programs) or can act through the promotion of social cohesion, social solidarity, social inclusion, human and social capital, educational opportunities, and other context-relevant pathways to achieve equity.

Key activities include the implementation of policies and programs that must ensure there is fair distribution of resources and opportunities (''redistribution''), equal ''representation'' (inclusion of all groups) and ''recognition'' of cultural and other types of identities, as well as ''reconciliation'' of past injustices (where possible) (Novelli et al., 2017). At the family level, programs must target and build social capital in the parents/caregivers, have a programmatic emphasis on family peace-relevant skills and resilience, and include elements such as self-regulation, conflict resolution skills, coping, and trauma-focused components (when relevant). At the child level, program activities must provide continuous opportunities for holistic development that encompasses health, nutrition, caregiver bonding, early learning, and safety of children and include the early promotion of prosocial behaviors, empathy, emotional regulation, and awareness of diversity.

The theory of change proposes that equitable access to quality services for children and families would lead to increased social/intergroup engagement and trust, positive relations, and resilient networks (among children, caregivers, communities). This horizontal social cohesion among community members can manifest itself at the community level, setting level (place of ECD service delivery), or family level. In addition, having quality social services in place can increase societal trust in governmental and institutional competencies (i.e., ''vertical social cohesion'').

The theory of change also proposes that quality ECD services would lead to increased human capital (i.e., improved health, education, and employment outcomes) of vulnerable populations, which can increase equality among groups and genders as well as increase economic productivity and sustainable development opportunities. Increasing social cohesion, equality, and economic and sustainable development opportunities will reduce the risk of conflict and promote sustainable peace. As previously explained in detail, these outputs could result from a combination of short- and long-term multidimensional outcomes.

It must be noted that the broader complexity and directionality of the pathways cannot be captured in a linear theory of change. For example, the distance and relationship between policies and programs are complex, rather than direct and proximal. Also, for ease of illustration, in this model the child is not visually represented as central to the process of change, while in reality that centrality is crucial. It is also important to consider that the change proposed here takes place over time with goals along the way that are not represented in the figure.

A Call to Action: Interdisciplinary Research and Multi sectoral Partnerships to Effectively Leverage the "Peacebuilding Through ECD" Agenda in the Context of Sustainable Development

The SDGs present a significant number of challenges and opportunities for developmental science. Our theory of change proposes that investing at scale in ECD programs that are responsive to the context, support holistic development, and integrate peace-promoting elements[7] is an effective way to strengthen sustainable peace and development. It furthermore requires the development of measurement frameworks that enable governments and practitioners to verify the impact of early childhood development interventions on interpersonal, intergroup, and societal cohesion.

In order to support this theory of change, interdisciplinary research that intentionally addresses knowledge gaps is needed. Below, we identify general categories of knowledge gaps and research questions needed to inform and substantiate the proposed theory of change:

Knowledge gap: Longitudinal impact evaluations of ECD programs on the promotion of prosocial and prevention of antisocial behaviors Research questions: What are the associations between ECD program participation and the reduction of externalizing, antisocial, or violent behaviors and crime/incarceration rates in low- and middle-income countries (LMICs), including conflict-stricken/refugee contexts? What are the impacts of ECD investments on prosocial behaviors (empathy, prejudice reduction, etc.) in adulthood, and how do they translate into positive youth/adulthood outcomes in the backdrop of severe structural challenges in diverse global contexts?

Knowledge gap: Impact evaluations on two-generation programs exploring effects on social cohesion and other markers of social factors associated with peace Research questions: How do ECD programs that increase human capital of the parents (through increasing parental education, employment, or empowerment) reduce risks of conflict and promote peaceful societies? How do ECD programs effectively promote intergroup cohesion in contexts of conflicting identity groups, and what are the impacts on community outcomes and social cohesion? To what extent can quality ECD services contribute to vertical social cohesion (i.e., community trust in government)?

Knowledge gap: Process evaluations that inform program characteristics and attributes of the program's implementation (as well as content) that maximize participation, adherence, and effectiveness of the programs Research questions: What

[7] Peace-promoting elements in this context refer to leveraging social services in ways that they mitigate drivers and triggers of conflict. For example, UNICEF's Peacebuiling, Education and Advocacy Programme pursued this strategy in 14 post-conflict countries.

program attributes in the context of ECD interventions are effective in supporting social cohesion and markers of social transformation? What are key enablers and barriers to the program implementation and context and beneficiary characteristics associated with program participation and adherence? Furthermore, according to our assessment, in many countries there is no conflict analysis evidence and hence no evidence that could orient planners to leverage ECD programs for mitigation of these drivers.

Knowledge gap: Policy analyses to understand the formulation, implementation, and scalability of crosscutting policies on peacebuilding through ECD Research questions: How are policies that address ‘‘peacebuilding through ECD’’ framed and implemented? What are enablers to the enactment and implementation of the policies?

In order to effectively address the knowledge gaps, multidisciplinary research and multisectoral partnerships are needed. Because of the crosscutting research and programing questions, developmental scientists must be aligned with practitioners, researchers in other disciplines, and policymakers to generate policy-relevant evidence in ways that are meaningful to peacebuilding and sustainable development. None of the research gaps noted above can be addressed in disciplinary silos. In support of this, a recent review of the literature and other contributions set forth a compelling model on early childhood and adversity, noting that future directions of work necessitate interdisciplinary collaborations that include sociology, biology, and developmental science to mutually inform and guide their research agendas (McEwen and McEwen, 2017; Lundberg and Wuermli, 2012; Wuermli et al., 2015). One such program of work that is seeking to address these gaps is the National Institute for Health Research (NIHR) Global Health Research Group on Early Childhood Development for Peacebuilding at Queen’s University Belfast. Under the auspices of the Early Childhood Peace Consortium, this research program seeks to build research capacities and to support the development and robust evaluation of ECD services in low- and middle-income countries impacted by political divisions and conflict. While the nature of the ECD services varies across each country, they all include a focus on promoting social cohesion and peacebuilding. This particular program involves a strategic partnership among Queen’s University Belfast, UNICEF, Yale Child Study Center, NYU Global TIES for Children, and the Harvard Humanitarian Initiative. It has a distinctive interdisciplinary focus and is based on multisectoral partnerships in each of the countries. One of the goals of this program of work is to use the experience of, and evidence generated from, the countries to develop and refine the theory of change set out above (Fig. 4.2).

This chapter highlighted the connections among ECD programs and how they can lead to the promotion of peacebuilding (as conceptulized by positive and negative peace indicators) and sustainable development. We argue there are tremendous opportunity and need for developmental scientists to interact with those working directly in peacebuilding and other sectors. A major goal for the new generation of

developmental scientist is to infuse evidence into the sustainability and peacebuilding agendas as a mechanism to achieving global prosperity.

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Chapter 5
First 1000 Days and Beyond: Strategies to Achieve the Sustainable Development Goals

Maureen M. Black and Katherine A. Merseth

Equity and universal prosperity are the central themes of the Sustainable Development Goals (SDGs), the global agenda through 2030 formed under the leadership of the United Nations and endorsed by countries throughout the world (Sustainable Development 2015). To achieve these themes, the SDGs include 17 diverse and ambitious goals and 169 targets designed to ensure effective strategies to meet current human needs while not compromising the ability of future generations to meet future needs.

The critical needs and developmental potential of the world's children are central features of the SDGs, represented by both goals and targets. At least 7 of the 17 SDGs are particularly relevant to young children: goals to end poverty and hunger; to ensure access to quality health, education, and sanitation; to achieve gender equality; and to reduce income inequality. The realization of these goals will be driven by aggressive targets aimed at improving early childhood globally, including ending malnutrition in children under age 5; reducing maternal, neonatal, and under-5 mortality; ensuring access to quality preprimary education for all; and promoting social protection policies. The Copenhagen Consensus, an expert panel of economists, identified 19 of the 169 SDG targets as offering a return of more than $15 for every $1 invested; 7 of those 19 relate directly to early childhood (Copenhagen Conference 2017). Thus, the success of the SDGs depends on ensuring that children throughout the world reach their developmental potential, thereby building the capacity for future generations to have the health, intelligence, creativity, and humanitarianism to move the global agenda forward.

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Fig. 5.1 Nurturing Care (Black et al. 2017a, b)

Evidence from recent research has shown that for children to reach their developmental potential, they require nutrition, health, responsive caregiving, opportunities to explore and learn, and protection from environmental threats (Black et al. 2017a, b). These five domains are interdependent, meaning that deficiencies in one can compromise the others, and indivisible, meaning that all are necessary and that no single domain is sufficient. Together, they comprise Nurturing Care, a framework that has been shown to promote early development (Fig. 5.1) (Black et al. 2017a, b; Britto et al. 2017; Richter et al. 2017). Children's need for a Nurturing Care Framework begins during the first 1000 days, from conception through age 24 months, and continues through early childhood (through age 8 years), with extensions throughout childhood and adolescence (Bundy et al. 2018).

This chapter addresses the SDGs from an early childhood development perspective. It is organized in five sections addressing the following interrelated objectives: (1) to examine how theories from developmental science establish a basis for achieving the SDGs; (2) to address how the timing of early experiences, particularly critical and sensitive periods, relates to early child development; (3) to review how the Nurturing Care Framework promotes early child development and strengthens countries' capacity to meet the SDGs; (4) to present the implementation of the Nurturing Care Framework as a multi-sectoral process; and (5) to discuss how the Nurturing Care Framework can advance the SDGs.

Early Childhood Development Theories

Theories of child development illustrate that the development of motor, cognitive, language, socio-emotional, and self-regulation skills occurs through interactive processes guided by biological maturation and environmental interactions (Sameroff 2009). The orderly progression of physical growth and developmental skills across

cultures (Bornstein and Hendricks 2012) illustrates a species-specific biological progress. However, variation in individual children's experiences and interactions contributes to variability in the acquisition and strength of acquired skills. Social-ecological theory conceptualizes children's development as influenced by children's individual biological and psychological makeup, together with interactions that extend from their family as the primary context through a broad ecology of social, political, economic, and cultural systems (Bronfenbrenner and Morris 2007). The primary context for children's development is their home and interactions with their primary caregivers, generally their mother and father. Influences from the broader ecosystems are typically mediated through the family, leading to individual and cultural differences in children's development. Thus, consideration of the ecological systems is necessary to develop effective interventions to promote or alter children's development.

Similar to social-ecological theory, the transactional model emphasizes the interactions between children and their surroundings. Based on transactional theory, these interactions are dynamic and bidirectional, meaning that although caregivers may organize their children's daily routines and opportunities, caregivers are influenced by their beliefs about child rearing in general and by specific interactions with their child (Sameroff 2009). This back-and-forth process between caregivers and children shapes their current and future interactions, illustrating a dynamic interplay between the roles of nature and nurture in guiding child development. Children's development is also influenced by the broader ecosystem, through interactions with other family members and caregivers, peers, and school and community members.

Children reach their developmental potential when they acquire developmental competencies in multiple areas (e.g., motor, language, socio-emotional, self-regulatory, and cognitive skills), often established by age and/or cultural norms. These competencies enable children to take advantage of early learning and socialization opportunities provided by their families and communities. Multiple domains influence the acquisition of competencies, including health, nutrition, security and safety, responsive caregiving, and early learning; these domains interact with each other and can be mutually reinforcing through the process of development. All are necessary for Nurturing Care and occur through bi- and multidirectional interactions, often initiated by both children and caregivers and sustained by their interactions.

Over the past 15 years, there have been major advances in early child development science, policies, and endorsements. As documented in a recent series of papers and commentaries in *The Lancet* on early child development, (1) environmental influences on brain development during the first 1000 days impact health and well-being throughout the life-course and into subsequent generations (Black et al. 2017a, b); (2) global leaders of international agencies including the World Health Organization, UNICEF, and the World Bank Group have endorsed early child development investments, programs, and policies (Chan et al. 2017); and (3) over 50% of low- and middle-income countries have adopted multi-sectoral policies of early child development (Black et al. 2017a, b). Case studies show the advances that have been made globally, such as the Crece Contigo program in Chile, when

those efforts are supported by national policies and political leadership (Richter et al. 2017). These advances are poised to address the global crisis that over 40% of children under age 5 years in low- and middle-income countries (249 million children) are not reaching their developmental potential, largely due to early nutritional and environmental adversities, together with lack of responsive caregiving and learning opportunities (Black et al. 2017a, b; Lu et al. 2016).

Developmental Science and Timing

Developmental science addresses changes in learning and performance across multiple domains that occur throughout the life-course and the mechanisms driving changes. Timing is a critical aspect of the orderly process that defines early child development (Wachs et al. 2014). Based on the genetic process underlying child development, there are specific periods when children are particularly sensitive to exposures that stimulate neural development and behavior. The concept of critical and sensitive periods in children's development refers to species-specific expectations and requirements, including exposure to sensory stimuli that promotes the development of basic skills, such as hearing and vision, as well as more advanced skills, such as language. Timing of neural processes is also dependent on exposure to specific nutrients. For example, closure of the neural tube begins approximately 22 days after conception and is dependent on adequate sources of folic acid. During critical periods, adverse exposures or the absence of an expected exposure may result in irreversible consequences to development. During sensitive periods, there is a heightened sensitivity to expected exposures but with some flexibility regarding timing. Recent evidence provides more support for the flexible boundaries of sensitive periods, rather than the rigid boundaries of critical periods (Wachs et al. 2014).

Through the progressive nature of child development, early skills form the basis for subsequent skills, meaning that the timely acquisition of skills positions children for subsequent advances.

Information regarding neurodevelopmental timing may be useful in planning for interventions to promote early child development, particularly among children who are experiencing or are at risk for specific deficits. Children with nutritional deficiencies experience more benefits of intervention during the first 1000 days, when the link between nutrient needs and neural development is strongest, than later in life (Black et al. 2015). Likewise, children with a severe hearing impairment experience greater benefit when cochlear implants are placed at 3 months, rather than at 24 months (Ching et al. 2017). In contrast, the impact of interventions to promote early cognitive development may be less dependent on highly targeted timing. Home-based interventions in Jamaica delivered in the first 2 years of life that focused on early child development activities have shown beneficial effects on children's academic progress, psychological development, and behavior through adolescence and into adulthood (Walker et al. 2005, 2011; Gertler et al. 2014). Evidence also supports the beneficial impact of interventions beyond age 2 years (Black et al.

2015). A meta-analysis concluded that high-quality child-focused preschool interventions (for children aged 3–6) produced consistent, positive effects and reduced the achievement gap associated with socioeconomic differences (Rao et al. 2014).

Timing of Adversities

Early life adversities can have long-term physiological and epigenetic effects on brain development and affect life-course development, especially when multiple adversities, such as poverty, nutritional deficiencies, exposure to violence, and low-quality resources, co-occur (Evans and Kim 2013; Pavlakis et al. 2015). Poverty has long-term effects that can undermine health and emotional well-being, even among individuals who have moved out of poverty (Hackman and Farah 2009; Johnson et al. 2016).

Multiple studies have demonstrated that as the number of exposures to adversities accumulates during early childhood, the rates of lifelong adverse consequences increase. The Adverse Childhood Experiences (ACE) studies have shown that young children exposed to traumatic or abusive childhood events are predisposed as adults to health problems, including cardiovascular disease, high blood pressure, type 2 diabetes, obesity, cancer, and depression, alcoholism, smoking, and substance abuse (Shonkoff et al. 2012). Children raised in poverty are at increased risk for multiple adverse exposures, including environmental toxins, conflict, nutritional deficiencies, and lack of responsive caregiving and opportunities for learning.

Infants are highly dependent on their caregivers to protect them from adversities and to help them regulate their physiology and behavior. Caregivers can protect infants and help them acquire regulatory processes through responsive care, including routines for sleeping and feeding. Children gradually build self-regulatory skills that enable them to manage stress as they interact with peers and acquire the skills needed for academic and social success. In situations where caregivers are unable to protect and buffer their infants from adverse exposures, household stress and exposure to violence and conflict can cause disruptions in the hypothalamic-pituitary-adrenal axis and brain morphology, potentially placing young children at risk for subsequent physical and mental health conditions (Johnson et al. 2013). The physiological consequences of early adversities have been well documented and linked to difficulties with self-regulation and anxiety throughout childhood and adolescence (Burkholder et al. 2016).

In addition to the evidence from low- and middle-income countries showing that 249 million children under age 5 years (43%) are at risk of not reaching their developmental potential (Black et al. 2017a, b), one-third of preschoolers are not reaching cognitive or socio-emotional milestones (McCoy et al. 2016). Although estimates on the prevalence of children with disabilities in low- and middle-income countries are limited (Maulik and Darmstadt 2007), with disorders of hearing and intellectual disability cited most frequently, it is widely recognized that the prevalence of disabilities among young children is high.

Timing of Responsive Caregiving

Although much of the research has focused on the negative consequences of adverse exposures that occur during sensitive periods of development, there has also been interest in whether interventions during sensitive periods can prevent or reverse negative consequences or even enhance typical development. The exposure to multiple interactions and contexts that is central to developmental science (Sameroff 2009) provides opportunities for children to form multiple relationships and to differentiate among social interactions. Neuroscientific evidence has shown that maternal nurturance during early childhood can attenuate the detrimental effects of poverty by protecting early brain development (Britto et al. 2017; Johnson et al. 2016; Luby et al. 2013).

The Bucharest Early Intervention Project (BEIP) is a severe and striking example of both the negative consequences of being raised in an institutional setting and the mitigating effects of the responsive caregiving that occurred through placement into high-quality foster care. In this prospective, longitudinal study, 136 children who had been placed in state-run institutions in Romania shortly after birth were randomized to be placed in a high-quality foster home or to remain in the institution. In addition, a sample of 72 children from Romania who had never been institutionalized was recruited to serve as a comparison group. The three groups of children ranged in age from 6 to 31 months (mean age, 21 months) at recruitment and have been followed throughout childhood.

The young children who had been placed into institutional settings displayed low cognitive functioning at their initial evaluation. Children who were placed into high-quality foster homes prior to 18–24 months of age experienced recoveries in cognitive and language functioning (Nelson et al. 2007; Windsor et al. 2007) and normal cortisol and parasympathetic nervous system reactivity to stress (McLaughlin et al. 2015). In contrast, children placed into high-quality foster care beyond 24 months and those who remained in the Romanian institutions continued to demonstrate delayed cognitive and language skills and blunted stress reactivity. These findings highlight the centrality of sensitive periods both for the negative impact of adverse experiences and the beneficial effects of positive caregiving experiences and illustrate the sensitivity of the physiological and psychological development to environmental exposures.

Evidence from other sources has also shown the beneficial and mitigating effects of responsive caregiving on children's development. For example, in low-income communities of Pakistan, the relation between a home visiting intervention during the first 2 years of life and children's cognitive skills at age 4 was mediated through responsive caregiving, measured by the quality of current and past home stimulation (Obradović et al. 2016). Additional trials of responsive caregiving are underway, often integrated with health and/or nutrition. In Kenya, Pell and colleagues (Pell et al. 2016) are integrating neonatal survival with responsive caregiving by training volunteer community health workers and supplying them with a neonatal survival kit (e.g., clean delivery materials), a portable handheld electric scale, and strategies

to promote responsive caregiving through using gentle touches with infants while making eye contact and talking, responsive feeding, and singing.

Life-Course Perspective

Developmental science emphasizes that neural-environmental interaction occurs throughout life (Nelson et al. 2006) with deleterious effects of accumulated adversities and promotive effects of nurturance. Co-occurring early life adversities are particularly insidious to life-course development. In contrast, early child development services and opportunities for early learning can improve child outcomes during later schooling (Berlinski and Schady 2015). Coordination across preschool and primary schools promotes smooth transitions between grades, enables children to build on their preschool skills, and facilitates a coordinated, sequential strategy for promoting early learning, which provides support for children across the life-course (Berlinski et al. 2009).

Recent longitudinal follow-up studies from early intervention trials in Jamaica and North Carolina illustrate the longitudinal benefits in wage earning (Gertler et al. 2014) and physiological markers, such as blood pressure (Campbell et al. 2014), resulting from very early interventions. These findings highlight that interventions early in life can alter life-course trajectories with benefits seen decades after the intervention.

Nurturing Care

Nurturing Care represents a stable environment that is sensitive to children's health and nutritional, cognitive, and psychological needs, with protection from threats, opportunities for early learning, and interactions that are responsive, emotionally supportive, and developmentally stimulating (Black and Aboud 2011; Black et al. 2017a, b; Britto et al. 2017). The home environment and interactions with primary caregivers form the basis of Nurturing Care, beginning during the first 1000 days and extending throughout early childhood. The daily routines that families establish for feeding, sleeping, hygiene, and play embody Nurturing Care. In addition to ensuring that children's health and nutritional needs are met, Nurturing Care includes protection from stress, conflict, and toxins, along with opportunities for early learning (e.g., storytelling, singing, and playing) and responsive caregiving (nurturance and responsiveness to child's signals).

The Nurturing Care Framework is well suited to be a central strategy for the success of the SDGs because it relies on an enabling environment that supports families; is based on sustainable systems of accountability that include monitoring, evaluation, and continuous quality improvement; and operates through country-specific policies and leadership (Black et al. 2017a, b; Richter et al. 2017) (see Fig. 5.2).

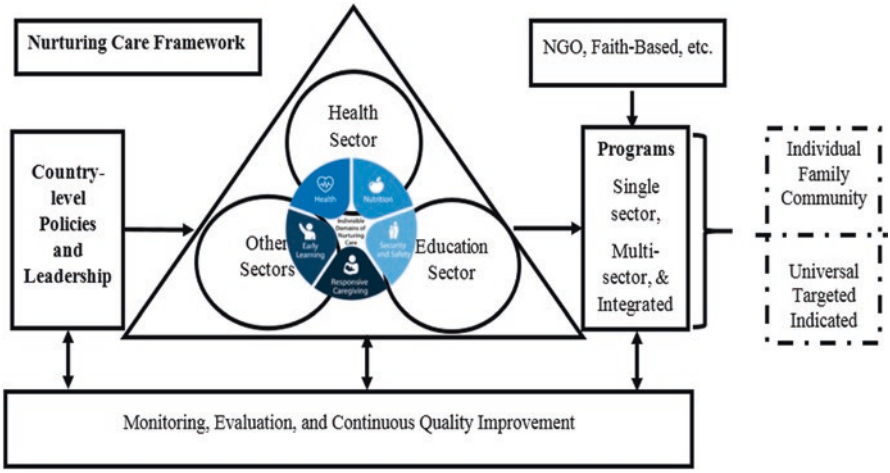

Fig. 5.2 Nurturing Care Framework

Family Resources and Maternal Education

Family resources have been linked to children's development in high-income countries (Bradley and Corwyn 2002). Recent studies from Madagascar, India, Indonesia, Peru, and Senegal have shown similar associations between maternal education and family assets with children's development, favoring children with better educated mothers and more family assets (Fernald et al. 2011, 2012). In Brazil, activities with low economic costs, such as storytelling, were effective in promoting development among young children (Barros et al. 2010). In addition, the effects of interventions may vary by family assets. Among 12- to 36-month-old children from India, Pakistan, and Zambia with and without birth asphyxia, the effects of an early developmental intervention on cognitive development were moderated by family assets (Bann et al. 2016). The intervention was effective in promoting developmental skills only among children from low-asset families. By the conclusion of the intervention period, their performance did not differ from the performance of children in high-asset families. The intervention did not lead to benefits among children in high-asset families, presumably because their families were providing the necessary stimulation without depending on the intervention.

Thus, in low- and middle-income countries, as well as in high-income countries, household assets are often positively associated with young children's growth and development (Bradley and Putnick 2012). A study of low-asset families in rural India found that maternal education and a home environment characterized by nurturance and early learning opportunities were positively related to infants' growth (weight and length) and development, suggesting the compensatory effects of maternal education, nurturance, and early learning opportunities (Black et al. 2016). Young children benefit not only from family assets but also responsive caregiving and early learning opportunities (Bradley and Putnick 2012). The implications are

striking because preventing poor growth, particularly stunting, has been associated with academic and economic advantages throughout life (Hoddinott et al. 2013; Sudfeld et al. 2015; Walker et al. 2011). Early learning lays the foundation for later learning and is essential (although not sufficient) for the development of optimized brain structure and functioning.

Enabling Environment

The implementation of the Nurturing Care Framework is dependent on an enabling environment. At the household level, an enabling environment means that caregivers have the physical and mental health, resources, and capacity to provide Nurturing Care. For example, caregivers burdened by mental health problems often lack the mood stability and emotional capacity required to consistently meet their chidren's emotional needs. Maternal depressive symptoms, even intermittent symptoms, can undermine maternal well-being and negatively impact parenting behaviors and children's development (Wachs et al. 2009). Children of mothers with depressive symptoms are at risk for difficulties in attention regulation, attachment, adaptive skills, and externalizing and internalizing behavior (Goodman et al. 2011), especially early in life when they are highly dependent on their mothers and sensitive to variations in interpersonal relationships (Campbell et al. 2004). Strategies such as the Thinking Healthy Programme, implemented by community health workers in Pakistan, have been effective in reducing depressive symptoms and promoting maternal psychosocial well-being (Rahman et al. 2008a, b).

Current State of Nurturing Care

As national governments and global leaders express interest in adopting the Nurturing Care Framework as a strategy to promote early child development and to achieve success with the SDGs, there is a strong need to develop systems and metrics to help countries monitor and evaluate the effectiveness of their progress toward both. In addition to evaluating changes on SDG indicators, such as the number of children with access to quality early childhood development, care, and preprimary education (Target 4.2), countries need systematic information on indicators of services, such as reach, coverage, cost, and requirements for training, coaching, and supervision. This information can be generated by a system of accountability that includes valid indicators, quality data, and timely feedback, thereby facilitating continuous quality improvement (Meyers et al. 2012). Valid, cost-effective, and feasible monitoring and evaluation strategies are also necessary to identify communities and children at risk, which is essential to ensure equity (Black and Hurley 2016). The ''data revolution'' recommended for the post-2015 agenda (United Nations 2013) and currently underway is making it possible for countries to manage large data

sets, close data gaps, modernize systems of data collection, and conduct data analytics – technologies and capacities that will enable the necessary systems approach to Nurturing Care.

International and private agencies are developing intervention strategies to address aspects of the Nurturing Care Framework, frequently by adapting existing programs. Some programs are very innovative with a broad reach and delivery platforms that include health-care clinical sites, homes, community sites, and digital media. However, there are few standards or definitions of quality service delivery. Insufficient evidence on characteristics of optimal program timing, dosage, and duration has led to variability in program designs and service delivery modalities. Intervention eligibility and targeting parameters also vary and may include individual caregivers, caregiver and child, family, and community groups. In addition, the scope of intervention coverage often varies. Some countries focus on universal interventions delivered at the population level, often through mass media. Others deliver interventions to selected communities, based on risk factors, such as high rates of undernutrition or poverty. Finally, others initiate screening and identify individual children and families to receive services. The variability across program and delivery characteristics encumbers systematic evaluation to inform subsequent programming. Evaluations can inform country policies and collaboration with governmental programs (potentially through public-private partnerships), with the goal of ensuring quality and sustainability.

Nurturing Care as a Multi-sectoral Process

Individual interventions targeting health, nutrition, stimulation (opportunities to learn), responsive caregiving, and protection from environmental threats delivered separately during the first 1000 days can benefit early childhood development (Aboud and Yousafzai 2015; Vaivada et al. 2017). However, it is inefficient, costly, and time-consuming to implement multiple interventions. This inefficiency has led to recommendations that interventions integrate health, nutrition, responsive caregiving, and other domains of Nurturing Care (Black and Dewey 2014). Yet there are few evaluations of either research interventions or programs that integrate nutrition and responsive caregiving interventions (Grantham-McGregor et al. 2014) and virtually none that incorporate all five domains of Nurturing Care.

The health sector plays a major role in ensuring children's pre- and postnatal health and development (Vaivada et al. 2017) and serves as an entry point for Nurturing Care in many countries. Nutrition is a central component of children's early health and development. Stunting (height-for-age, 2 standard deviations below expectations), a marker of chronic undernutrition, serves as a proxy for early child development. Recent evidence from Bangladesh and Vietnam suggests that advances in young children's height-for-age are associated with modifiable environmental factors, including socioeconomic status, food security, maternal education, and hygiene, suggesting that environmental interventions may lead to reductions in

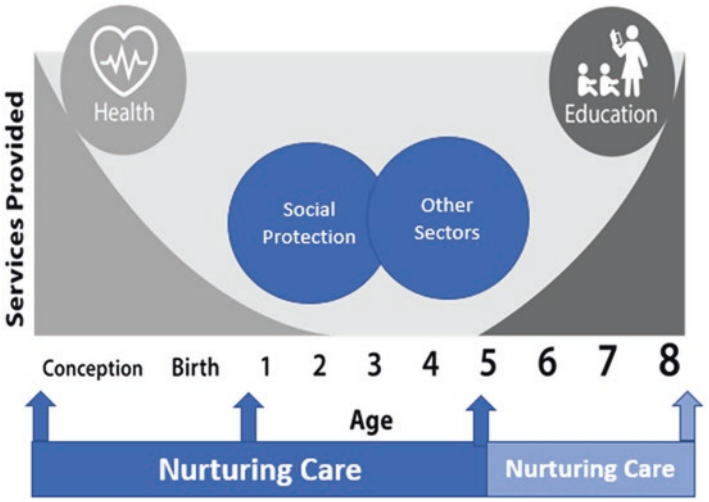

Fig. 5.3 Gap between health and educational services (Black et al. 2017a, b)

stunting (Nguyen et al. 2017). The education sector plays a major role in enabling children to achieve their intellectual potential, with increasing attention to the benefits of preprimary education on children's subsequent academic performance (Berlinski and Schady 2015), cognitive development (Rao et al. 2014), total years of schooling (Engle et al. 2007), and efficiency through primary school (Crouch and Merseth 2017). Preprimary enrollments have increased globally from 31% in 2000 to 49% in 2015 (UNESCO Institute for Statistics 2017), and SDG Target 4.2 calls for all children to have access to quality preprimary education by 2030. Although children's health, nutrition, and education are interdependent, there has been limited coordination across sectors. The result is a gap between the end of routine health services and the initiation of formal education services (Fig. 5.3). This gap from approximately 2–5 years of age is a sensitive period in children's development and represents a missed opportunity to ensure that children are receiving Nurturing Care and are reaching their developmental potential.

Nurturing Care and the SDGs

Recent research has focused on the first 1000 days, with an emphasis on both the vulnerabilities and capacities for change that occur during this period. Although reaching developmental potential early in life increases the odds of success throughout life, early success cannot protect children from subsequent adversities. Children need Nurturing Care throughout early childhood, particularly during the preschool years when there is often a gap in services (Black et al. 2015; John et al. 2017). Neural-environmental interactions occur throughout life (Nelson et al. 2006), and children continue to be impacted by both negative and positive experiences.

The impressive progress that has been made in reducing mortality among children under 5 years of age by more than 50% (from 91 deaths per 1000 live births in 1990 to 43 in 2015) illustrates the successful application of science into practice with meaningful results. Success in achieving the equity and universal prosperity for this generation and the next envisioned by the SDGs will require a citizenry and workforce with the capacity to address both technological and humanitarian issues. With a foundation in developmental science, strong supportive evidence, and necessary advances in a systems perspective, the Nurturing Care Framework is well positioned to increase the number of children reaching their developmental potential and to demonstrate advances of equity and universal prosperity in attainment of the SDGs.

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Part II
Lifelong Learning, Health, and Well-Being Among Children and Youth: Multiple Perspectives on Challenges to Sustainable Development

Chapter 6
Young People and Climate Change: The Role of Developmental Science

Ann V. Sanson, Theodore D. Wachs, Silvia H. Koller, and Katariina Salmela-Aro

Introduction

Climate change has been described as the greatest intergenerational and health challenge of the twenty-first century. Successfully addressing it is the focus of Sustainable Development Goal (SDG) 13 which states "Climate action: Take urgent action to combat climate change and its impacts." The centrality of climate change to all the SDGs is reflected in the statement "Climate change presents the single biggest threat to development, and its widespread, unprecedented impacts disproportionately burden the poorest and most vulnerable. Urgent action … is integral to the successful implementation of the Sustainable Development Goals."

SDG 13 calls for both mitigation (action to reduce the extent of climate change) and adaptation (strategies to cope with the effects of climate change). It names three targets: strengthen resilience and adaptive capacity to the impacts of climate change; integrate climate change measures into national policies, strategies, and planning; and improve education, awareness-raising, and capacity on climate change mitigation, adaptation, impact reduction, and early warning. It calls for developed countries to honor their commitments in the Paris Agreement to contribute $100 billion

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annually toward achieving these targets and increasing capacity for effective climate change-related planning and management in the least developed countries.

Because the effects of climate change are so far-reaching, it will impact on progress on most of the other SDGs. Psychology provides insights into why people often deny or avoid confronting climate change, as well as into strategies to encourage effective action. Developmental science can play a major role in increasing understanding of how climate change will impact on children and youth and how they can be supported both to contribute to the mitigation of climate change and to adapt to its unavoidable effects.

This chapter starts by briefly outlining the science of climate change and its impacts in broad terms. Then we spell out the links between climate change and the other SDGs. This is followed by a review of the evidence linking climate change to many aspects of child and youth well-being, drawing on developmental science to explain how these effects occur.

After highlighting the respective roles of developed and developing countries in addressing mitigation and adaptation to climate change, we discuss engaging children and youth in mitigation efforts, with emphasis on three conceptual frames from developmental science: positive development, meaning-focused coping, and global competencies. We follow this with discussion of child and youth participation in adaptation efforts, presenting some illustrative examples.

The concluding section highlights the urgency of mitigation of climate change, the necessity of adaptation, and the value and role of developmental scientists in contributing to both of these.

The Science of Climate Change

The Causes of Global Warming

Climate change refers to the warming of the planet caused by the buildup of greenhouse gases in the atmosphere, which prevent heat from escaping into space. The major greenhouse gas, carbon dioxide (CO_2), is released largely through the burning of fossil fuels. Atmospheric CO_2 concentrations have increased by 40% since the nineteenth century, with more than half the increase occurring since 1970. CO_2 concentrations are now over 400 parts per million (ppm) – well beyond 350 ppm, which climate scientists considered was the "safe" maximum, and a rise from 315 ppm in 1958. Other greenhouse gases, methane and nitrous oxide, have also increased markedly since preindustrial times, largely due to agricultural practices, burning of natural gas, and use of nitrogen-based fertilizers (National Academy of Sciences and Royal Society 2014).

Many feedback loops exacerbate the impacts of global warming. For example, higher temperatures in the polar regions melt sea ice and reduce snow cover, exposing a darker ocean and land surface that can absorb more heat, causing further

warming. Another example is the melting of permafrost causing the release of large quantities of methane.

The United Nations Framework Convention on Climate Change (known as the Paris Agreement), signed by leaders of 195 countries in December 2015, reflected the global acknowledgment that "climate change represents an urgent and potentially irreversible threat to human societies and the planet." The Agreement committed nations to seek to limit the increase in temperature to below 2 °C, preferably below 1.5 °C. However, changes in climate are occurring faster than forecast – in February and March 2016, the global temperature increase reached 1.6 °C (NASA 2016).

In summary, the climate science indicates that we must rapidly move beyond fossil fuels and eliminate man-made emissions of greenhouse gases almost entirely by mid-century. Without rapid technological and policy changes to reduce emissions, further warming of up to 4.8 °C can be expected during the twenty-first century (National Academy of Sciences and Royal Society 2014), with catastrophic effects (see section "The impact of global warming on the environment and human life"). The Paris Agreement noted the necessity for the widest possible cooperation by all countries in order to achieve the required deep reductions in global emissions, but change is currently not happening fast enough (Allen et al. 2015).

The Impact of Global Warming on the Environment and Human Life

Even on the best scenarios (staying below 1.5 °C of warming), climate change will create significant changes to the world environment. Its impact is already being felt in many parts of the world, with an increased frequency and severity of extreme weather events (EWEs) such as hurricanes, wildfires, and floods. As more CO_2 dissolves in the oceans, seawater is becoming more acidic, affecting marine organisms. Climate change is already changing growing seasons and the migration patterns of animals and causing bleaching of coral reefs and the extinction of some species (Grimm et al. 2013).

As these and other changes (such as sea level rises and storm surges) accumulate and intensify, there will be both direct and indirect effects on human societies, relating to the production of food, availability of clean water and disease prevalence, as well as the immediate consequences of EWEs. The WHO (2002) estimated that climate change contributed to more than 150,000 deaths and about 5 million lost disability-adjusted life years worldwide *in 2000 alone*, through increases in diseases such as diarrhea, malnutrition, and malaria, mainly in developing countries. Sea level rises, and storm surges are already forcing some island communities to relocate. Climate-related EWEs such as heat waves, droughts, and wildfires each carry a substantial cost to individuals and communities.

If we experience more than 1.5 °C of warming (as is inevitable without urgent action), more catastrophic changes in the environment and human lives are predicted. We are likely to see major disruptions in the basic necessities for human health and well-being – food, water, clean air, and a safe place to live (Garthwaite and Mitchell 2014).

Poorer countries are expected to suffer the greatest impacts of climate change, despite having contributed least to its causes. Not only are they predicted to suffer a greater frequency and intensity of climate-related events, but the impacts will be compounded by factors such as weaker physical infrastructure, less secure food systems, lower average education levels, and larger proportions of children and older adults (Clayton et al. 2017). The International Organization for Migration reported that in 2008, 20 million people were displaced by EWEs, compared to 4.6 million displaced by conflict and violence. Future forecasts vary from 25 million to 1 billion environmental refugees by 2050, with 200 million being most commonly cited (International Organization for Migration 2018). Climate change will therefore exacerbate the "underlying social, economic and ecological determinants of global illness and premature death" (Costello et al. 2009). Besides major effects on physical health from diseases, malnutrition, and disasters, Clayton et al. (2017) have noted the diverse and serious psychological impacts of climate change on human well-being, ranging from acute mental health impacts, such as post-traumatic stress disorder (PTSD), anxiety, substance abuse, and depression, to chronic conditions including higher rates of aggression; a sense of helplessness, hopelessness; or fatalism, and intense feelings of loss.

Climate Change and the Other Sustainable Development Goals

The relevance of climate change is implicitly or explicitly acknowledged in most of the other SDGs. SDG 1 ("no poverty") includes the aim to support people harmed by climate-related EWEs. Given the likely impact of climate change on food production, SDG 2 ("zero hunger") is clearly related to climate change; for example, there is evidence that for every degree Celsius of warming, agricultural yields in Africa would be reduced by 10–30%, directly threatening families' livelihoods (Hanna and Oliva 2016). Since the overall health impacts of climate change are predicted to be extremely negative (Oppenheimer and Anttila-Hughes 2016), achievement of SDG 3 ("good health and well-being") will similarly be more challenging.

Climate change will make "quality education" (SDG 4) more difficult to achieve. Kousky (2016) showed how natural disasters can harm schooling in multiple ways: by destroying schools; by reducing attendance and achievement if children are hurt, sick, or malnourished; and, in developing countries in particular, by parents shifting

children out of school and into the labor market to enhance family income. The fact that girls tend to be removed from school in times of hardship more often than boys (UNICEF 2015) is related to SDG 5 "gender equality."

Achieving the goal of "clean water and sanitation" (SDG 6) will also be impacted by climate change. The number of countries experiencing water stress has risen from 36 in 1998 to 41 in 2011, at least in part due to climate change, and water supplies and sanitation are frequently impacted by floods and other EWEs.

In calling for "access to affordable and clean energy," SDG 7 is directly related to the mitigation of climate change. Three billion people rely on polluting fuels for cooking, and while the use of renewable energy is slowly growing, this trend clearly needs to accelerate. Providing "decent work and economic growth" (SDG 8) will be complicated by climate disruptions. Similarly, SDG 9 ("industry, innovation, and infrastructure") highlights the need for world economies to shift rapidly to less energy-intensive industries.

Indicating the relevance of climate change to SDG 10 ("reduced inequalities"), the UNICEF (2015) publication *Unless We Act Now* graphically illustrates how climate change disproportionately affects the poorest, deepening existing inequities. Making cities and human settlements more inclusive, safe, resilient, and sustainable (SDG 11) will be more challenging in the context of climate-induced disasters and EWEs and large numbers of climate refugees. Ensuring sustainable consumption and production patterns (SDG 12) is integral to mitigating climate change. SDG 14 ("life below water") also relates to climate change, since the carbon dioxide absorbed in oceans is resulting in ocean acidification which impacts on marine ecosystems. Similarly, climate change is clearly a major factor in creating environmental damage, making it more difficult to achieve SDG 15 ("life on land").

Indicating that progress on SDG 16 ("peace, justice, and strong institutions") is likely to be hampered by climate change, a review by Hsiang, Burke, and Miguel (Hsiang et al. 2013) found that hotter temperatures and reduced rainfall increased the risk of all types of conflict, particularly intergroup conflict. For example, the unprecedented drought in Syria from 2006 to 2010 was a catalyst to the current civil war, causing roughly 1.5 million people (particularly young men) to migrate from rural areas to cities with scant services and opportunities. Hence climate change has been described as an "accelerant" and "threat multiplier" to political instability. Finally, effectively addressing climate change will not be possible without strong global partnerships (SDG 17).

In conclusion, climate change is central in the achievement of almost all the SDGs. Furthermore, progress on the other SDGs will be critical in building capacity to adapt to the inevitable effects of climate change. Table 6.1 indicates the specific SDGs affected by known developmental risk factors associated with climate events.

Table 6.1 Associations between climate change markers and known developmental risk factors

Climate change marker	Developmental risk factors sensitive to climate change	Directly relevant SDGs	References
Rising temperatures	Crop failure, livestock death, and reduction in fish stocks, resulting in increased malnutrition and dietary deficiencies	1, 2, 3, 10, 14, 15	Council on Environmental Health (2015) and McMichael et al. (2012)
	Increased exposure to infectious and parasitic diseases	3	McMichael et al. (2006) and Sheffield and Landrigan (2011)
	Increased prenatal and pregnancy complications	3, 10	Sheffield and Landrigan 2011
	Increased intergroup violence	16	Hsiang et al. (2013)
Changes in rainfall patterns resulting in drought	Crop failure and livestock death resulting in increased malnutrition and dietary deficiencies	1, 2, 3, 14,15	Garcia and Sheehan (2016) and Patra (2016)
	Reduced availability of clean water or adequate sanitation resulting in greater exposure to infectious diseases, increased conflict over water resources	3, 6, 10, 15, 16	Costello et al. (2009) and McMichael et al. (2006)
	Food or economic insecurity and increased societal conflict over scarce resources resulting in increased involuntary migration	1, 2, 4, 7, 8, 10, 16	Heaney and Winter (2016) and McMichael et al. (2012)
Rising sea level or recurrent flooding	Flooding resulting in disruption of food production, increased exposure to environmental toxins	1, 2, 3, 15	McMichael et al. (2006) and Sheffield and Landrigan (2011)
	Increase in infectious or parasitic waterborne diseases, contamination of fresh water sources	3, 6	Costello et al. (2009) and Garcia and Sheehan (2016)
	Increased family stress	10, 16	Asugeni et al. (2015)
	Increased forced migration and intergroup conflict	11,16	McMichael et al. (2012) and Reuveny (2007)

(continued)

Table 6.1 (continued)

Climate change marker	Developmental risk factors sensitive to climate change	Directly relevant SDGs	References
Increased extreme weather events (floods, heat waves, wild fires, etc.)	Breakdown in existing health (e.g., water, sanitation), educational (e.g., schools), and economic infrastructure	3, 4, 6, 8, 9, 11	Costello et al. (2009) and Clayton et al. (2017)
	Elevated risk of exposure to infectious diseases	3	Few (2007)
	Increase in societal and family violence (e.g., child and spousal abuse)	10, 16	Doherty and Clayton (2011)
	Increased exposure to parasitic and infectious diseases; food contamination; child undernutrition; loss of primary caregivers, educational opportunities, and social support networks; increased family displacement from homes, environmental chaos, and involuntary migration; increased maternal pre- or postnatal stress	1, 2, 3, 4, 8, 10, 15	Council on Environmental Health (2015), Garcia and Sheehan (2016) and Clayton et al. (2017)
Environmental degradation of land	Increased adult depression	3	Speldewinde et al. (2009)

Note: Only SDGs directly affected by the events are listed; due to complex interactions, many more will be indirectly affected – e.g., poor health leading to educational disadvantage and forced migration leading to poverty, hunger, health, and education effects. Also note that only effects which have been directly substantiated in existing published research are listed – many more are likely.

The Impact of Climate Change on Child and Youth Development

While everyone will feel the effects of climate change, those most vulnerable to its impacts will be children and youth in the developing world, where 85% of the world's children live (UNICEF 2014b). Further, the "future" focus of the SDGs makes them particularly relevant to children and youth. The bioecological systems framework adopted by developmental scientists (e.g., Bronfenbrenner and Morris 2006) provides tools for understanding the complex interplays between a changing environment, varying cultural contexts, and individual development and adaptation. Within a bioecological framework, climate change events can either directly or indirectly impact on children's development. Due to their early rapid growth and the immaturity of their physiological, immune, and neural systems, children are particularly vulnerable to the direct biomedical impacts of climate change (Perera 2008; McMichael 2014). Because of their dependency on adults (Council on Environmental Health 2015; UNICEF 2015), many of the psychosocial consequences of exposure to climate-related EWEs will be indirect, being mediated by the resulting stress on parental physical, emotional, and social well-being, as well as

family functioning and economic status and structure (Clayton et al. 2017). For example, following Hurricane Floyd in North Carolina, families were found to be vulnerable to higher child abuse risk, increased parental stress, and decreased social support (Fritze et al. 2008).

Deficits in children's physical, cognitive, socio-emotional, and interpersonal development have long-term educational and economic consequences and underlie the intergenerational transmission of poverty and disadvantage (Behrman and Urzua 2013; Grantham-McGregor et al. 2007).

Biomedical Consequences of Climate Change

Multiple reviews have documented the adverse consequences of climate change on child physical health (Council on Environmental Health 2015; Garcia and Sheehan 2016; Sheffield and Landrigan 2011). Mediating pathways through which climate change translates into adverse child health outcomes also have been specified (Costello et al. 2009; Few 2007; McMichael et al. 2012; Patra 2016; UNICEF 2015). Identified mediators linked to climate change include:

- Malnutrition
- Increased exposure to infectious, gastrointestinal, or parasitic diseases and environmental toxins
- Reduced access to health facilities

Psychosocial Consequences of Climate Change

There is less evidence on psychosocial outcomes of climate change, particularly with regard to children. Current research typically focuses either on adults (e.g., Doherty and Clayton 2011; Reser and Swim 2011) or on children's reactions to time-limited natural disasters such as earthquakes (Goenjian et al. 2005) and tsunamis (Neuner et al. 2006).

The available evidence documents that climate change-driven EWEs are linked to significant psychosocial consequences in childhood (Council on Environmental Health 2015; Dean and Stain 2010; Garcia and Sheehan 2016; Goldman and Galea 2014) including:

- Post-traumatic stress disorder
- Depression
- Panic, sleep, or anxiety disorders
- Cognitive deficits, learning problems, and impaired language development

There is also clear evidence of less serious, but more widespread, psychological impacts. Even in high-income countries that are not yet suffering direct effects of climate change, surveys have found the majority of children and young people are worried about their future, and many experience fear, anger, and a sense of powerlessness (Ojala 2015). There is concern about how the threat of climate change is affecting their sense of the future (Sanson 2017).

Although empirical evidence is currently limited, there are compelling conceptual reasons to expect significant and long-term impacts of climate change on children's psychosocial development, *particularly in LMICs*. Comprehensive reviews have documented that children's psychosocial development varies as a function of the ratio of the child's exposure to identified biological, individual, contextual, or cultural risk factors (which act to inhibit development) versus their exposure to protective factors (which attenuate the impact of risk factors) or promotive influences (which facilitate development regardless of the level of exposure to risk factors) (Walker et al. 2011; Wachs and Rahman 2013).

Table 6.2 presents the known developmental risks for psychosocial development that are either directly or indirectly sensitive to climate changes. At present, there is less evidence linking climate change to children's exposure to protective/promotive influences, although studies are beginning to address this. For example, Wickrama and Kaspar (2007) showed that positive mother-child relations reduced the risk of adolescent depression and PTSD following a major tsunami in Sri Lanka. Protective/promotive influences are often the mirror image of risk factors (e.g., more language stimulation in the home is a promotive factor; lower language stimulation is a risk factor), and hence an increase in specific developmental risks can often mean a corresponding reduction in protective/promotive influences (Wachs and Rahman 2013).

The Importance of Cumulative Risk Exposure

Children and families can cope remarkably well when exposed to a single time-limited risk. However, exposure to recurrent cumulative risk factors is particularly detrimental to children's psychosocial development (Corapci et al. 2010; Garcia and Sheehan 2016; Wachs et al. 2016). As discussed in the section "The science of climate change," climate change increases the frequency and severity of EWEs and natural disasters which can disrupt access to support systems for health and education (SDGs 3 and 4) and thus add further stress to communities that are already dealing with high levels of economic or social stress. Climate change events are also likely to continue over time and thus produce repeated or continued exposure to developmental risk factors (UNICEF 2015).

Individual Differences in Reactivity

Not all adults or children will be equally affected by exposure to climate change events (Garcia and Sheehan 2016; Vijayakumar et al. 2006; Clayton et al. 2017). Obviously severity of exposure to a given event is a critical factor (Goldman and Galea 2014). However, a number of non-climatological factors can accentuate or attenuate the impact of climate change on children's development.

Accentuating child, family, and community factors include:

- Pre-existing physical or mental problems (e.g., Doherty and Clayton 2011; Goldman and Galea 2014; Reser and Swim 2011)
- Prior exposure to traumatic events (e.g., Goldman and Galea 2014)
- Belonging to a family with a low income (UNICEF 2015) or small social support network (Goldman and Galea 2014)
- Loss of family members or homes (Clayton et al. 2017)
- Maternal depression ((Wickrama and Kaspar 2007)
- Overcrowding (e.g., McMichael et al. 2012; Reuveny 2007)
- Greater community reliance on natural resources (Doherty and Clayton 2011)
- Poor community health, education, or transportation infrastructure (McMichael et al. 2012)
- Weaker norms on community participation, social networks, and trust in authorities (Few 2007)

Attenuating child factors include:

- Being older when the event occurs (Garcia and Sheehan 2016)
- Greater adaptability (MacDonald et al. 2013) and self-regulation (Clayton et al. 2017)
- Having a stronger sense of personal control (Stevenson and Peterson 2016) and self-efficacy (Clayton et al. 2017)
- The ability to use meaning-focused coping strategies (Ojala 2015)

To these attenuating child characteristics could be added the mirror images of many accentuating factors (e.g., while low family income acts as an accentuating factor, higher family income can act as an attenuating influence).

Summary

There is increasing evidence showing compromised physical and psychosocial development of children when they are exposed to climate change events, though not all children will be equally affected. Developmental science shows how climate change operates to compromise development of children through increasing their exposure to cumulative risk factors while reducing their exposure to protective/promotive influences.

The Role of Developmental Science in the Mitigation of Climate Change

Responses to the threat of climate change fall into two broad categories: mitigation and adaptation. Mitigation refers to efforts to slow or halt the progress of climate change, relying predominantly on measures to reduce carbon emissions and to absorb carbon dioxide already in the atmosphere. Without mitigation, the world will become basically uninhabitable. While individuals, families, and communities can contribute to mitigation by reducing their "carbon footprints," mitigation at the scale and speed that is required to avoid over 2 °C of warming involves policy change at national levels, as reflected in the Paris Agreement. Especially in democratic societies, political change is grounded in popular support, and hence individuals have an active responsibility as citizens to encourage action at a political level.

Mitigation of climate change is an issue particularly, but not exclusively, for developed countries which are the major emitters of CO_2. Here our focus is on the role of developmental science in helping individuals (particularly children and youth) to manage their negative emotions surrounding climate change and develop the skills and attributes which will help mitigate climate change, working toward achieving not only SDG 13 but a number of other SDGs. These skills and attributes will at the same time equip them to adapt better to the effects of climate change.

Despite the clear evidence that most people, including children and youth, are worried about climate change (Sanson 2017), there is also evidence that few are taking active steps to help mitigate it. Psychology provides insights into the processes of denial and avoidance which underlie inaction but also into the ways in which effective action can be stimulated. An example of a model to encourage action is the ACTIVATE model, where each letter in the acronym refers to an insight from psychological science (e.g., "A" stands for "acknowledge feelings," and "C" refers to "create social norms"; see Australian Psychological Society 2017). Such models can help build psychological resiliency as well as motivate policy makers to act, by supporting young people to:

- Avoid being overwhelmed by fears and anxieties about how climate change will affect their future lives
- Develop a sense of self-efficacy and collective efficacy
- Engage in actions which both help manage their anxieties and contribute to popular support for climate action

At the same time, young people will need to adapt to faster and more wide-ranging changes than we have ever seen before. As the world shifts to a zero-carbon economy, there will need to be massive changes in lifestyles, including the ways we work, consume, and travel. Likely challenges include the experience of destructive EWEs, large numbers of climate refugees seeking a new home, and the conflicts such events may engender. This suggests that the next generation will need highly developed capacities for adaptability, resilience, problem-solving, and conflict resolution. Further, they will need to learn to participate in a more interconnected and

diverse world. Hence, attributes such as empathy and compassion, tolerance and acceptance, skills for cooperation and shared action, beliefs in equality, justice and environmental protection, and strong community orientation and engagement will also be critical. Three concepts from developmental science may be valuable in helping young people to develop these skills and attributes.

Positive Development

A number of models of positive development have been articulated (e.g., Lerner et al. 2005; Leman et al. 2017). One example is the model emerging from the 34-year Australian Temperament Project (ATP) which has followed a large representative cohort of Australians from infancy to adulthood (Vassallo and Sanson 2013). Its positive development framework includes both *hedonic* attributes, such as life satisfaction, and *eudaimonic* attributes such as empathy, civic engagement, tolerance, and trust toward others (Hawkins et al. 2009). Positive development in early adulthood was predicted by four broad factors from childhood through early adolescence: self-regulation; positive and supportive relationships with parents, peers, and teachers; school being perceived as a place of belonging and feeling valued; and being a contributing member of their community, through such activities as volunteering, membership of youth groups, political awareness, and close connections with neighbors. Eudaimonic qualities in adolescence also predicted better emotional health in young adulthood.

Meaning-Focused Coping

Meaning-focused coping is especially important when a problem cannot be removed or solved immediately but demands active involvement over the longer term (Ojala 2015). It includes positive reappraisal and trust and hope (conceptualized as a constructive motivational force that lies between optimism and pessimism). It has similarities to the concept of preparedness (Salmela-Aro 2009). In research with Swedish youth, Ojala (2015) has shown that meaning-focused coping is associated with more environmental efficacy, more environmental engagement at private and political levels, and higher well-being, despite serious concerns about climate change.

Interventions to support the development of positive development and meaning-focused coping could focus on helping young people develop a sense of individual and collective efficacy to nurture a sense of empowerment, encouraging volunteering and community engagement, encouraging a deep connection with nature, modeling responsible political action, and promoting a eudaimonic perspective in schools that values and promotes “intrinsic” attributes as much as intellectual and occupational success.

Global Competencies

The Council of Europe and OECD have developed a conceptual model of the global competencies needed by the next generation if they are to participate effectively and live peacefully with others in culturally diverse democratic societies. Global competencies are developmental assets or transferrable "soft skills" which refer to young people's capacity to address issues of local, global, and intercultural significance, to take multiple perspectives, to interact successfully with others, to respect others, and to take responsible action toward sustainability and well-being. Key competencies include values, attitudes, skills, and knowledge to respond appropriately and effectively to the demands, challenges, and opportunities that are related to climate change.

An ongoing project in Finland called *dLearn. Helsinki* aims to promote the global competencies of youth through schools. Global competencies have already been acknowledged in the National Core Curricula for Basic Education of several countries (including Finland). The *dLearn* project aims to identify the key global competencies and to engage teachers and others in pedagogical developments to facilitate learning of them. It seeks to increase students' awareness, interest, and understanding about the importance of global competencies for their current and future lives and to build their sense of agency, self-efficacy, and preparedness for possible setbacks, so they are more able to help create the future they want. This is in line with OECD's Education 2030 framework (OECD 2016) and UNESCO's call for global citizenship education (UNESCO 2014). Principals and parents are also involved, with the aim of increasing broader societal awareness of the importance of global competencies for students. An App is also being developed to help young people navigate and shape the future they want, building their resilience and creativity to help to build global sustainability.

Summary

Overall, the promotion of positive development, meaning-focused coping, and global competencies appear valuable approaches for preparing young people, especially those in democratic developed countries, for the realities of climate change and providing them with the active citizenship skills needed to promote speedy action to mitigate climate change. However, research on these concepts has been almost entirely conducted in wealthy Western countries, and it is as yet uncertain how applicable they are for the non-Western LMICs which will bear the brunt of climate change. For example, Harkness et al. (2013) emphasize the need for policies and programs to reflect and fit in with cultural perspectives and understandings of child development. There are clear opportunities for developmental science research in non-Western countries and across a wide age range on the best ways to help the next generation mitigate climate change and buffer its impacts.

The Role of Developmental Science in Adaptation to Climate Change

Adaptation refers to strategies to cope with current and future climate change. Since climate change is already happening now and, even with serious mitigation efforts, will inevitably worsen, effective adaptation measures are critically needed. Since LMICs will suffer the worst impacts of climate change, they need to focus most on adaptation. The word "mitigation" is also sometimes used in the sense of mitigating or reducing the *impacts* of climate change, rather than reducing climate change per se. How developmental science can respond to the SDGs by contributing to mitigation of the *impacts* of climate change and *adaptation to* climate change is discussed below.

As noted above, the most significant negative impacts of climate change will be felt in LMICs, where limitations in infrastructure and human and economic resources reduce the capacity to mitigate the impacts and adapt effectively to climate change. It is therefore inevitable that many children and young people will be exposed to negative repercussions, hence the need to proactively develop interventions and programs to enhance communities', families', and young people's abilities to adapt to climate change and to loss and disruption resulting from EWEs such as floods and wildfires (e.g., Gelkopf et al. 2008). Such adaptation strategies need to be framed within existing cultural realities. Given that child age can moderate the impact of experiences on development, different intervention strategies may be needed for children of different ages (Wachs et al. 2014). Many of the concepts discussed in section "The role of developmental science in the mitigation of climate change" are relevant here, but efforts focused more directly on adaptation are also needed.

Adaptation Strategies for Infants and Young Children

The infancy and preschool age periods are characterized by rapid development across neural, cognitive, and psychosocial domains and by reliance on adults (Perera 2008; UNICEF 2015). All of these are likely to be adversely impacted by the presence of developmental risk and absence of promotive/protective factors sensitive to climate change (e.g., those in Table 6.1). To maximize the ability of infants and young children to adapt to climate change events, intervention strategies need to reduce their exposure to risk factors (e.g., through preventive actions such as building flood barriers and providing shelter and nutritional supplementation) while increasing their exposure to protective/promotive influences (e.g., keeping families together, providing cognitively stimulating activities for children in safe spaces). Such integrated intervention strategies are being used in an increasing number of programs involving infants and young children from LMICs (e.g., Hamadani et al. 2014; Lopez-Boo et al. 2014; Walker et al. 2006). While not targeted directly toward

the impact of climate change events, these programs provide a model for future interventions to promote child and family adaptation to climate change. They not only offer a means to reduce the impact of climate change upon children but also to increase the likelihood of meeting the achievement of other SDGs (e.g., SDGs 2, 3, 4, 6, 13, and 16).

Adaptation Strategies for Older Children and Adolescents

Hart et al. (2014) noted that "taking action through playing a meaningful role in the face of adversity can offer *psychological protection* by helping children to feel more in control, more hopeful and more resilient" (p. 93). It is important to conceptualize children and youth not merely as victims of climate change but also as powerful agents of change, offering opportunities for their active engagement.

The United Nations Convention on the Rights of the Child (UNICEF 2014a) can be considered an intergenerational contract, based on the three Ps of Provision, Protection, and Participation. Provision relates to ensuring children can possess, receive, and have access to resources. Protection refers to avoiding all forms of harm, abuse, neglect, and cruelty against children. Participation assures children the freedom to express their views about social, economic, religious, cultural, and political issues that affect their lives and to be heard. Engaging in these rights as they mature helps prepare children for an active role in society, as moral and healthy citizens. The interconnectedness between climate change and children's rights elevates the CRC as a vital tool for protecting children's rights in a changing climate.

While young people are sometimes invited to participate in high-level meetings of organizations such as the United Nations and OECD, this involves only a very small number of children, and opportunities for active engagement in decision-making at more local levels are also important. Several countries have developed plans and programs to include child-centered approaches and ensure that children's rights are integrated into policy implementation, and there are a number of impressive but relatively small-scale programs which engage children and young people in LMICs in climate change adaptation. Table 6.2 provides some examples of such programs, which show how children can work together on prosocial initiatives to improve their communities and build their capacity to withstand climate change. Programs are mostly run by UN agencies and NGOs (UNICEF 2014b).

Back, Cameron, and Tanner (Back et al. 2009) have developed a model of the stages of engagement of young people in dealing with climate-related disasters (Fig. 6.1). This shows the incremental process from knowledge and preparedness (how to stay safe in a disaster) to action and advocacy at community and eventually national or global levels. This model of children's growing agency in ever wider circles of their ecological and social context applies not only to adaptation but also to mitigation efforts.

There is an important role for developmental science in contributing to these initiatives and developing new ones to support children and young people in adapt-

Table 6.2 Some examples of youth participation in climate change programs

Focus	Country	Program	Strategy	Impact	References
Climate change adaptation	Zimbabwe	Zimbabwe National Climate Change Response Strategy	Multiple workshops Policies and planning	Increased child awareness of climate change and participation in the protection of resources	UNICEF & IES, Children and Climate Change in Zimbabwe (2013)
Sustainable energy	Bangladesh, Mongolia, Somalia	Sustainable Energy for Cooking: Protecting Girls	Building capacity Raising awareness Training for girls and women	Improved cook stove use Reduced deforestation and respiratory problems Better family relations and use of kitchens	UNICEF, Why sustainable energy matters to children (2015)
Air pollution control	Japan	Japanese International Cooperation Agency	Tackle the air pollution problems affecting children	Increased participation by youth in addressing climate-related problems	UNEP, Air Quality Policies (2015)
Education	Bangladesh, Brazil, Bulgaria, Costa Rica, Dominican Republic, Ethiopia, Ghana, Guatemala, Macedonia, Panama, Vanuatu	National Climate Change Strategies	Learning about climate change, food security, biodiversity conservation, flood disasters, droughts Design new quality education processes Inclusion of cross-curricular components on climate change Planting trees Creation of environmental clubs	Enabling children to survive and stay safe in the face of disasters Empowering children by training them as climate change celebrity ambassadors	UNICEF, Climate Change Adaptation and Disaster Risk Reduction in the Education Sector (2012)

(continued)

Table 6.2 (continued)

Focus	Country	Program	Strategy	Impact	References
Protection of rain forests	Brazil, Guyana, Peru	Children and Youth Act on Climate Change	Child-to-child educational programs	Increased knowledge of the importance of forests in mitigating climate change among children in both the developing and developed world	United Nations Joint Framework Initiative in Children, Youth and Climate Change, Youth in Action on Climate Change: Inspirations from around the World (2013)
Protection against floods	Zambia	Unite-4-Climate	Training on leadership and advocacy skills Peer outreach, media programs Advocacy efforts Debates	Increased capacity of youth to communicate to community members about climate change through media and drama	UNICEF, Children and the Changing Climate: Taking Action to Save Lives (2015)

ing in developmentally appropriate ways to climate change. Theoretical understandings of the processes involved in building resiliency and coping capacities, and models derived in the developed world such as positive development and global competency frameworks, need to be tested for their relevance and value in LMICs and appropriately adapted to the new contexts of climate change. The roles of schools, communities, and families need further elaboration, as does the capacity of actual and online child/youth-led communities and digital tools to enable sharing of knowledge and experience, networking, and partnerships. Given that climate change is so closely related to the achievement of all the other SDGs, efforts to mitigate the impacts of climate change and build the capacity for adaptation will also have positive impacts on these SDGs.

Summary and Conclusions

LMICs will suffer worse consequences from climate change than developed countries, due to their geographic position, agriculture-dominated economies, limited resources, and weaker infrastructure. The impacts of climate change are likely to

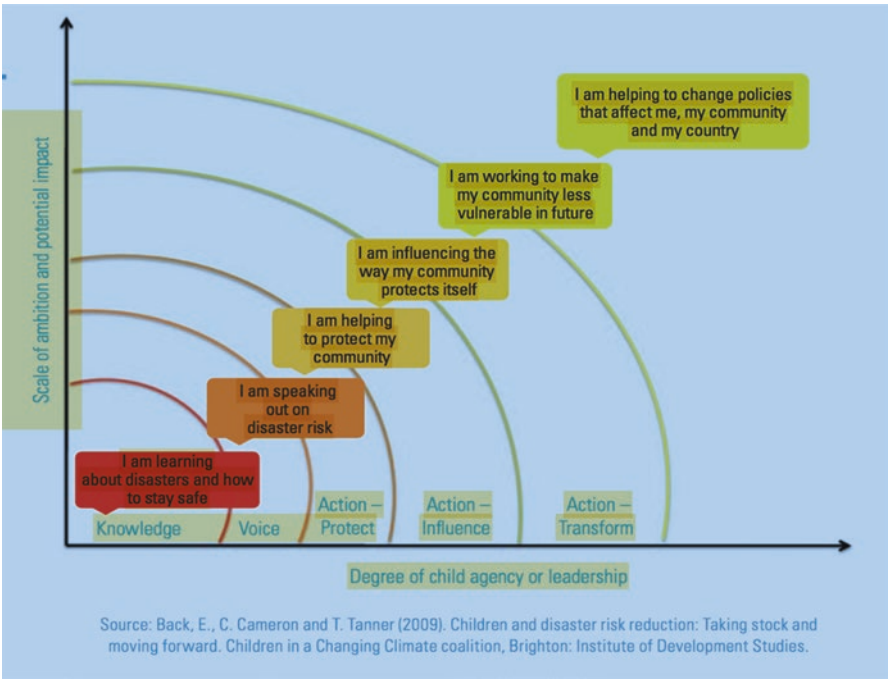

Fig. 6.1 Model of incremental engagement and voice of young people. (Source: Back et al. 2009)

greatly exacerbate existing inequities between nations and regions and will also make it more difficult to achieve most of the other SDGs.

The bioecological systems perspectives adopted by developmental scientists provide tools for understanding the complex interplays between a changing environment, varying cultural contexts, and individual development and adaptation (Bronfenbrenner and Morris 2006). Children and youth are more vulnerable to the impacts of climate change due to their immaturity and dependency and through exposure to multiple interacting risk factors, resulting in negative impacts on multiple aspects of physical health and psychosocial development. The presence of protective factors can at least partially buffer children from these negative effects.

If a central concern of developmental science is the well-being of future generations, it can be argued that its efforts should be directed first and foremost to helping prevent or mitigate catastrophic climate change. Mitigation is largely a responsibility of the developed world which creates most carbon emissions. Developmental scientists have expertise in the causes of human behavior and how to change it and can therefore contribute to understanding and responding to the broad-based tendency to discount or ignore the need for urgent action to prevent worse climate change.

While being among the greatest victims of climate change, children are also powerful agents for change. Current climate change decision-making is determining

the lives of children far into the future, so it is right that they should have the opportunity to participate and contribute to creating solutions to protect their future lives. Developmental science offers models and interventions which can be used to support children and youth to be resilient to the challenges of climate change and to contribute effectively to solutions to mitigate it, buffer its effects, and adapt to it. Young people need to be empowered to manage their lives in meaningful and responsible ways, with a hopeful but realistic orientation toward the future and the knowledge, values, and skills to take on active citizenship roles. They also need to learn how to deal effectively with the negative emotions associated with climate change. The encouragement of positive development, meaning-focused coping, and global competencies are among the approaches that hold promise for building capacities of youth to respond effectively as individuals, community members, and citizens and need to be tested in diverse contexts.

Children and youth will need to adapt to a very fast-changing world. For young children exposed to climate change events, support for their healthy development is based on reduction of exposure of risk factors and enhancement of protective/promotive factors, within the context of their families and communities. For older children and adolescents, being given the opportunity to actively contribute to combating climate change can provide important psychological protection, building self-efficacy, and resilience. There are many programs addressing different aspects of climate change adaptation that include youth participation, coagency, and collaboration, but their coverage is currently patchy, and their impact is largely untested.

The science relevant to climate change policy and practice is dominated by research from developed countries, which may hinder the development and implementation of global climate change agreements and nationally appropriate actions (Blicharska et al. 2017). Understanding of local contexts is facilitated when research is led by local researchers, and this in turn is likely to encourage decision-makers to translate results into locally sensitive policy and practice. Blicharska et al. (2017) note that the limited research about LMICs, especially research led by academics from local institutions, limits the efficacy and legitimacy of assessments of climate change vulnerabilities, impacts and risks, and monitoring and evaluation of adaptation actions. Similarly, the applicability of psychological concepts derived in the developed world needs to be tested in other contexts and revised or replaced with culturally and contextually meaningful ones. There is a clear need for more developmental science research in LMICs, led by local researchers, on the human impacts of climate change and effective ways of buffering it, in local contexts.

An old proverb states "It takes a village to raise a child." Regarding the global challenge of climate change, the whole earth is the "village," and there needs to be a global effort to protect the well-being of future children and youth. Similarly, the adage "Think globally, act locally" perhaps needs to be broadened. "Think *and* act, locally *and* globally"(Hart et al. 2014) emphasizes the need for solutions at a global level, while "Think globally, act locally, respond personally" (Reser 2010) reminds us of the emotion-laden nature of concerns about the future of the planet. Culturally sensitive developmental scientists can contribute highly valuable skills in addressing the urgent and complex global challenge of climate change.

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Chapter 7
Enhancing the Health and Education of Deprived Children: Implications for Sustainable Development in Cameroon

Therese M. S. Tchombe, Lambert Wirdze, and Asangha Ngufor Muki

Introduction

Health and education are mutually reinforcing, supportive, and complementary, in ensuring the promotion and support for better livelihoods in an era forging sustainable development. Societies are evolving and changing yet trying to maintain new social, economic, and political order to also promote healthy environmental balance and stability. Under such climate, access to quality education and health facilities become vital tools to enhance sustainable development as pointed out in sustainable development goals (SDGs). The term deprived children as used in this chapter refers to children under 18 years of age who lack access to proper care, control, shelter, good nutrition, health, and education necessary for their physical and socio-emotional well-being. In different communities of Cameroon, there exists an assortment of categories of deprived children and youths, ranging from orphans, children living with disabilities, homeless or abandoned, street children, the displaced, and other ethnic minorities. They lack access to health in terms of appropriate habitat, balanced nutrition, sanitation, potable drinking water, and health facilities. Absence of relevant knowledge and appropriate explanatory theories about the implications of access to these resources and their inability to assume responsibility of managing life situations exacerbates the situation. Accordingly, there is no denying that sociocultural contexts of development overtime have been hostile and negative toward most children and youths. Yet, some if not most have been able to exercise control over their own thought processes and actions, intrinsically motivating and affecting their actions. These operate through their personal agency.

Despite these adversities, parental socialization practices adopt strategies of effective give-and-take through a mediated mutual reciprocal interaction (Tchombe 2011). Parental engagements of their children in cultural amplifiers such as farming,

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hunting, fishing, manual work, and house chores are evidence of their ability to be resilient. Fostering self-regulation skills in the process enables children and youth to direct their attention, manage emotions, keep track of rules, and inhibit their impulses and fears. Accordingly, they develop socio-cognitive processes in controlling their behaviors and those of others in adaptive ways. African parenting mediates learning experiences by implicitly creating and shaping learning opportunities that enhance deprived children's and youths' development in health and learning (Tchombe 2011). Socio-cognitive process is manifested in the decisions made and the quality of the adjustment and adaptation process provoked by the changing contexts. Considering socio-cognition as a process is to highlight not only how children use the process but how they do so to explain psychological phenomena. The holistic theoretical framework of mediated mutual reciprocity is action oriented leading to the use of different competences and techniques such as:

- Sharing of behavior based on the mutual need for collaboration and cooperation in any learning, task, or decision-making.
- Assuming a transforming role by redirecting process through initiating, negotiating, and modulating to suit individual's rhythm and modifying the learning behaviors of others.
- Monitoring a task in order to adjust one's behavior appropriately. It is an unconditional give-and-take process with no hierarchy.

This basic introduction to this chapter initiates a discussion on the current state of health and education in Cameroon. Section 1 gives a brief demographic overview of the state of health and education indicators among children; Section 2 examines culturally relevant social support services available to enhance the health and education of deprived children; Section 3 elaborates the challenges faced by the government in implementing the SDGs in the health and education sector; Section 4 highlights constraints and challenges in providing quality health and education services for children; and Section 5 focuses on ways of addressing these challenges with sustainable solutions and mediated mutual reciprocity strategies that enhance health and education among deprived children and youth in Cameroon.

Background

Children are at the center of concern for sustainable development. They are entitled to a healthy and productive life in harmony with nature. The goals of sustainable development cannot be achieved when there is a high prevalence of debilitating illnesses, and population health cannot be maintained without ecologically sustainable development. Despite undoubted health advances in many areas, poor health among children and youth in Cameroon continues to be a constraint on sustainable development efforts. In some cases, the process of development itself is creating conditions wherein health of children suffers as a result of economic, political, and social upheaval, environmental degradation and uneven development, or increasing

inequities in access to resources. The World Health Organization (WHO) according to its 1948 constitution defines health as a state of complete physical, mental, and social well-being of an individual and not merely the absence of disease or infirmity (WHO 2011). Access to education and health are important determinants and indicators of psychosocial development among young people as these play an important role in the development of children's self-esteem, cognitive skills, and sociocultural well-being.

Access to Education

Cameroon has a pre-primary population of 1,402,610 pupils, primary population of 3,806,736 pupils, secondary population of 3,722,513 students, and a tertiary population of 2,231,240 students (UNESCO 2016). Although youth in the age group of 15–24 may still be in school and working toward their educational goals, it is notable that approximately 10% of youth have no formal education and 20% of youth have attained at most incomplete primary education, meaning that in total 30% of 15–24-year-olds have not completed primary education in Cameroon (UNESCO 2016). In Cameroon, 17% of children of official primary school age (6 years old) are out of school. For example, approximately 15% of boys of primary school age are out of school compared to 19% of girls of the same age. Nearly 33% of females of secondary school age (12 years old) are out of school compared to 22% of males of the same age. For youth of primary and secondary school age, the biggest disparity can be seen between the poorest and the richest youth (UNESCO 2016). Many factors contribute to this low enrollment rate such as financial crunch, especially at the secondary level, shortage of classrooms and teachers, lack of educational technologies, and quality of teachers particularly in more remote areas. For girls, the rate of enrolment is further affected by sociocultural biases, early marriage, sexual harassment, unwanted pregnancy, and domestic responsibilities (International Children's Awareness 2011).

According to Child, Youth, and Family Development (CYFD) Annual Report of 2004 and 2005, most children in sub-Saharan Africa, especially those living in the rural areas, still lack access to formal education. Poverty (which is SDG 1) is a burden on families rendering them incapable to send children to schools. The provision of primary education was actually revealed to be one of the least important problems of villages surveyed in Southwest Region in Cameroon with children walking to schools in neighboring villages more than 4 km distance (Davis 2000). School fees in Cameroon were also withdrawn in the year 2000; hence financial access to education in rural areas is no longer deemed problematic with the exception of uniforms, exercise books, and other educational needs (Davis 2000).

In education, according to UNESCO (2016), access to primary school in Cameroon rose to 95% in 2015, partly due to the government's decision to eliminate public school fees. School completion rate has remained low (65.75%), indicating that only one out of two children entering primary school manages to successfully

complete the cycle because of high rates of repetition (12.17%) and dropout. Also, 67.9% of students who complete primary school make a successful transition to secondary education. These weak completion and retention rates are indicative of underlying structural problems which have considerable social and economic costs involved because of rapid population growth and urbanization. Children's access to education in Adamawa region of Cameroon is subjected to a gender split with many girls being excluded from schools teaching the national curriculum but rather being encouraged to attend Islamic schools to learn Arabic and teachings of the Koran (Amin and Dubois 1999). In general, the tendency is that more affluent cattle owners send their children to school, whereas cattle rearers who lead a nomadic existence tend not to educate their children. Increasingly, female children are being allowed to attend government- or community-run schools where they are taught in French (a foreign language) but are often married off between the ages of 12 and 15 (Amin and Dubois 1999).

Access to Health

Health intervention coverage in Cameroon stands at 55%, which is relatively low (WHO 2016). More so, children and youth mortality rate stands at 51 deaths/1000 live births (Cameroon Demographics Profile 2018), which is also relatively high. As with many rural communities throughout sub-Saharan Africa, formal health care is often sought only in emergencies, when the cost of service provision and transport to the nearest hospital can be justified. The same is true of rural Cameroon where the most common frequency of travel to health clinics is by pregnant women and those in labor. In some rural areas in the Southwest Region, patients are transported in push trucks or on the back of relatives for some 5–20 km to the nearest rural health center (RHC). If fortunate, they can catch a lift with a transporter but often settle for giving birth at home in the absence of passing vehicles (Davis 2000). There are outreach programs and community health workers who operate between one and six times a year providing child vaccinations and primary treatments. A particular complaint of participants was that after traveling up to 20 km to the nearest RHC and paying between 200 and 600 FCFA for a consultation, they receive prescriptions only, therefore requiring them to travel to the nearest town to obtain drugs. Sassa Mbersi in Adamawa region of Cameroon is a case in point; the RHC is 50 km from the nearest town at Mbe and only has facilities to treat malaria and typhoid (Davis 2000).

In the recent years, UNICEF and its partners, including United Nations High Commission for Refugees (UNHCR) and the Ministry of Health, have been working to reach vulnerable Cameroonian children and youth in some of the most isolated areas of the Eastern and North regions (Barón and Melton 2010). Yet, poor infrastructure, lack of trained health workers on site, and poor health and feeding practices among families and communities have limited the impact of these interventions, leaving hundreds of thousands vulnerable (Barón and Melton 2010).

There is little history of seeking basic health care for the prevention of childhood diseases, and as a result, the potential of transmission of communicable diseases is alarming (WHO 2011). Also alarming is the issue of food insecurity as rates of malnutrition among Cameroonian children in the East and Northern regions are increasing due to competition for scarce food supplies and a lack of awareness among mothers and caregivers to proper feeding practices for infants and young children (WHO 2011).

High incidence of malnutrition has negative developmental outcomes among children. Accordingly to WHO (2009), 11% of infants are born with a low birth weight, 36% of children under the age of five are stunted, 16% are underweight, and 7% are wasted, while 45% of those aged 15 and above are overweight. Over one-third of child deaths are due to undernutrition, mostly from increased severity of disease. Undernourished children between conception and age 2 are at high risk for cognitive development impairment. In particular, vitamin and mineral deficiencies impact well-being and are highly prevalent in Cameroon. Preschool-aged children (39%) and pregnant women (18%) are deficient in vitamin A, and a supplementation with dietary diversification can eliminate this deficiency. Half of the households in Cameroon do not consume iodized salt, leaving children in those households unprotected from iodine deficiency disorders. Current rates of anemia among preschool-aged children and pregnant women are 68% and 51%, respectively (WHO 2009). Iron-folic acid supplementation of pregnant women, deworming, provision of multiple micronutrient supplements to infants and young children, and fortification of staple foods are effective strategies to improve the iron status of these vulnerable subgroups. Adequate intake of micronutrients, particularly iron, vitamin A, iodine, and zinc, from conception to age 24 months is critical for child growth and mental development (Institute of Statistics & International Classification of Functioning Macro 2004).

In general, the lack of awareness to the basic needs of growing infants and young children underscores this impending child survival crisis. Efforts must be made to support the knowledge and outreach capacity of rural health centers in order to better educate and engage caregivers and communities in basic child care in order to enhance sustainable psychosocial development of children (Barón and Melton 2010).

Culturally Relevant Social Support Services

Cameroonian society is confronted with the challenge of promoting the emotional, social, and intellectual development of children and youths. Indeed, in most Cameroonian communities, there are no appropriate structures and specific programs for vulnerable children due to poor governance. Notwithstanding these adverse conditions, the Cameroonian child and youth possess social resources that could act as protective factors. These include family and community solidarity, age group membership, and participation in collective action (Asangha 2015). With

respect to solidarity, in typical Cameroonian societies, an individual receives social support from members of the immediate family, extended family, and the members of the community, which aids him or her to cope with the vicissitudes of life. As to age group membership, it provides the child with peer support and prevents social isolation. Lastly, participating in community activities such as collective farming allows the child to develop, at an early age, an appreciation for working in a group. These elements of social capital in African cultures could be related to the concept of resilience and thus help young people in gaining skills and realizing the significance of investing in the sustainable development of their communities (Asangha 2015).

Socialization for adult roles begins early for children. According to Tchombe (2011), children of Bamiléké ethnic group in Cameroon engage very early in various forms of interaction with persons in the social milieu and with available rich physical and material resources. These experiences are meaningful, sustainable, and transferable. The adolescent is already the owner of a farm or a petty business and a member of "thrift and loan" or Njangi group, which is an avenue to raise capital through loans to start or sustain an existing business. The activities and abilities to participate are fostered by the inculcation of the values of endurance, patience, persistence, honesty, respect, and hard work, which are indelible characteristics of the Bamiléké people. Perseverance, according to the people, is a key to success. As they develop, deprived children participate in these economic activities depending on the nature and difficulty level of such tasks as selling and participating in the bargaining and negotiation of the prices of commercial wares.

In same light, according to Fomba (2011), such human development strategy that deprived young people benefit from is common through sustainable livelihood activities such as farming, carpentry, mechanics, craft, fishing, animal rearing, blacksmithing, and small businesses. Investment in life skills through traditional preparation strategies has been drawn from the firm belief that young people through peer cultures are agents of change with the potential of taking a leading role in socioeconomic development of their communities as they transit from childhood to the world of work. Such life skills acquired by these young people, as highlighted in SDG 4.7, are highly important with regard to achieving sustainable development. This is also in line with SDG 4.4 which advocates for a substantial increase in the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs, and entrepreneurship.

Available Social Support Services for Orphaned and Vulnerable Children (OVC)

According to the National AIDS Control Committee (2010), providing social support for orphaned and vulnerable children, especially those affected by HIV-AIDS, poses a great challenge for both families and the society. Many disadvantaged

children live out of the family support, and hence they are marginalized, stigmatized, and exposed to vulnerable conditions such as lack of schooling, begging, pedophilia, juvenile delinquency, prostitution, and transmission of STIs. In 2006, when the Cameroon government integrated OVC into its health and education policies, key services such as education, birth registration, health, nutrition, water and sanitation, judicial protection, and placement services were identified as crucial for children and youth without family care (UNICEF, UNAIDS, and the Future Group 2006).

Nonetheless, the country possesses a good number of social support institutions that cater for the needs of orphaned and vulnerable children. Figure 7.1 below illustrates these support systems.

In 2006, taking into consideration all categories of OVC, there were 183, 523 identified for assistance by the national AIDS Control Committee, of which assistance was provided to 25,643 (14%). In 2007, assistance was given to 43,505 of them, an increase by 69.6%. However, when AIDS orphans were examined, 12,776 and 28,319 (121.7% rise) were, respectively, catered for in 2006 and 2007 (Mbanya et al. 2008).

Cameroon therefore has been able to put in place support services that can cater for the health and education needs of disadvantaged children and youth. Nonetheless,

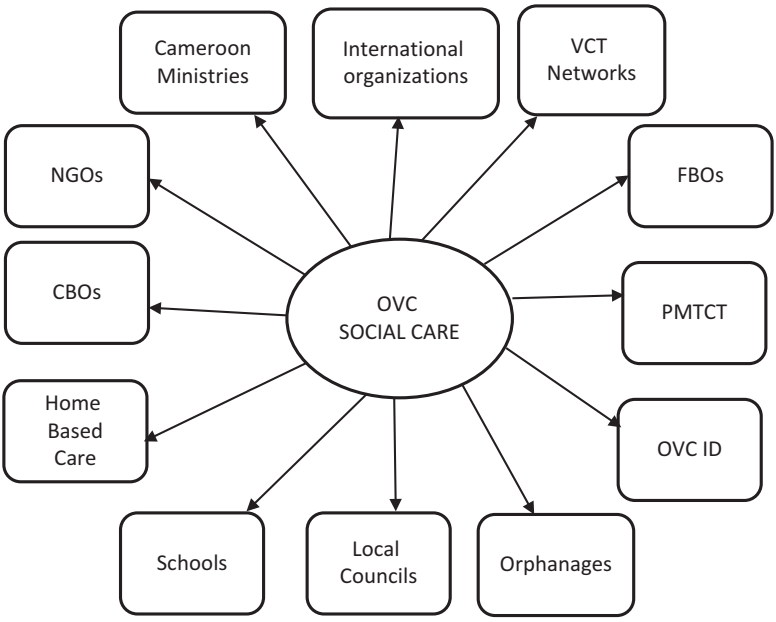

Fig. 7.1 Sources for identifying and providing care to OVC in Cameroon (Source: Adapted from Nsagha et al. 2014). Key: *NGO* non-governmental organization, *FBO* faith-based organization, *CBO* community-based organization, *PMTCT* prevention of mother-to-child transmission of HIV, *VCT networks* voluntary counseling and testing, *OVC ID* orphans and vulnerable children identification

there are challenges faced by the government in the implementation of health and education strategies and services. Let us critically examine government's efforts toward the implementation of SDGs in Cameroon and the challenges faced.

Challenges Faced by the Government in the Implementation of SDGs Related to Health and Education

The government of Cameroon since the advent of the MDGs (2000–2015) and now SDGs (2015–2030) has put in place strategic plans in the education and health sectors that are geared toward sustainable development as discussed in the following section.

Implementation Strategies

According to the World Bank (2017), the current plan for sustainable education in Cameroon is the *Document de Stratégie du Secteur de l'Education et de la Formation (DSSEF, 2013-2020)*. In this new vision for education in Cameroon, the Cameroon government focuses on three issues related to (i) access to and equity in education and training, (ii) quality and relevance of education and training and (iii) governance, management, financing, and modalities for monitoring and evaluation of the already existing educational and training reforms in Cameroon (DSSEF, 2013–2020). In order to create access to equitable and quality education for deprived children, the government has endorsed a management strategy that builds on the 1996 constitution and 1998 law on the Orientation of Education, to put decentralization at the center of educational management. Accordingly, the construction and rehabilitation of schools should be implemented at the regional level with relationships between parent-teachers associations (PTA) and the local administration be formalized. Thus, decentralization calls for more involvement of the civil society in management of education and training in Cameroon.

In relation to the health sector, Measure Evaluation (2017) states that since the advent of Agenda 2030 and the SDGs, Cameroon does not have a current health strategy for the implementation of SDGs. Nonetheless, the country's health strategy, which just expired in 2015, was aimed at strengthening health districts, reducing morbidity, decreasing maternal and child mortality, and improving inter-sectorial management for health. Despite government's moves toward the achievement of equitable and quality health/education, these attempts have always remained at paper level with little or no implementation. As highlighted by Tchombe in the early 1990s, the Cameroon government adheres to all international pleas to improve access to education for deprived children, but this is only evident in armchair theorizing rather than concrete action qualitative terms (Tchombe 1994). This

superficiality in the implementation of educational reforms has left the country with enormous challenges in the realization of SDGs. Cameroon still registers a high number of children deprived of parental care, abandoned children, and orphans who need care and protection, including the ones affected by HIV-AIDS and victims of trafficking, exploitation, and abuse. These pose great health challenges for Cameroon ranging from limited availability of residential facilities, lack of adequate and current policy, and insufficient human, technical, and financial resources to cater for these deprived children.

Challenges for Providing Quality Health and Education Services for the Deprived Children and Youth

Cameroon's educational and health sectors face multiple challenges in a bid to realize the sustainable development goals. These challenges have been categorized into four major points.

1. **Fragmented institutions (multiple ministries), poor governance, and accountability**

The education and training of deprived children and youth encompass four ministries of education and other related ministries that are responsible for decision-making for the target population, that is, Ministry of Basic Education, Ministry of Secondary Education, Ministry of Technical and Vocational Training, Ministry of Higher Education, Ministry of Youth, and Ministry of Social Welfare (World Bank 2017). This makes problem solving and decision-making to be very cumbersome due to a lot of bottlenecks, poor cohesion, and coordination of the educational system.

Poor governance and accountability are crucial issues that plague equity and quality education in Cameroon. One of the greatest problems that lead to inequitable distribution of education in Cameroon is poor governance, heavy centralized administration, and weak accountability. The health sector on its part has suffered serious challenges due to the dichotomy between the central administration and health districts. By 2002, 150 health districts were created in Cameroon with the aim of making the districts autonomous in managing their own affairs (Nsagha et al. 2014). But the decentralization process in Cameroon has become a myth rather than a reality making it difficult to manage the districts due to central governments' continuous interference (Ministry of Public Health 2009a, b).

2. **Financing and funding of education and health**

Another challenge that is faced by the Cameroon government in the education of deprived children is financing of education. Since one of the greatest problems faced by deprived children in Cameroon is poverty and lack of resources, the

government needs to increase its funding on education so as to make it accessible to these groups of people.

In relation to health, Cameroon spends more money (US$61) per capita on health, which is above the average spending (US$51) in sub-Saharan Africa. The paradox however is that majority of this spending comes from the private sector. Out of that $61, the State finances only $17; and out of that sum, $8 comes from international donors (World Bank 2013a). Allowing health care principally in the hands of the private sector makes children and youth to become disadvantaged psychosocially and economically. The absence of concrete health insurance makes quality health care to be affordable only by the rich and wealthy to the detriment of the poor, especially those who live in rural areas.

3. **Gender and socioeconomic disparities**

Depending on where children live, their household wealth, or gender, some children face lower likelihoods of completing basic education. Some children remain ill-equipped to make the transition to secondary school, let alone to enter the labor market (UNESCO 2010). Gender and socioeconomic disparities pose a serious challenge to the education of deprived children and youth. The enrollment of boys in school continues to exceed that of girls (139% as to 129%) in 2014/2015. Furthermore, the enrollment for girls 69% in rural areas is far less than that of boys 79% (World Bank 2017). Early marriages, male chauvinistic ideas that the male child is the bread winner of the family, and low level of family income are some reasons that conspire against female education in formal schools in Cameroon.

There are equally serious disparities at regional level. Cameroon is made up of ten regions, but not all regions are having a fair share of equitable distribution of educational resources. The 2006 Education Sector Strategy identified certain geographical areas as priority for government support to raise schooling access, attainment, and achievement, as they were lagging behind the rest of the country in education outcomes. The Zones of Education Priority is comprised of four regions (Far North, North, Adamawa, and East) and certain "pockets of low levels of school participation in the largest cities" and of the border regions. Children in the Adamawa, East, North, and Far North are more vulnerable to lack of access to quality education (World Bank 2013b, c).

In relation to rural and urban settlements, there are more street children in the urban areas than in rural areas (Tchombe et al. 2001). Rapid rate of urbanization in Cameroon leaves children to be vulnerable especially in urban slums where they experience lack of access to quality education. The implication of these statistics is that the more money a family has, the more likely the children can have access to qualified professional health and education services, whereas in poor families, children and youth will have a much higher risk to poor education and health facilities (World Bank 2013a).

4. **Inadequate human and material resources**

Perhaps, one of the greatest challenges faced by Cameroon in the education of deprived children is the lack of competent human and inadequate material resources

to embrace diversity in schools in general and classrooms in particular. According to Arbeiter and Hartley (2002), many teachers are ill prepared to face new challenges of diversity in the classroom. Teacher training centers in Cameroon have failed to develop teacher profiles that can accommodate children with disabilities and those living in adversities.

In a transnational research carried out in Cameroon, Ivory Coast, Kenya, Togo, and Nigeria, Tchombe (2014) highlights that school administrators, teachers, and institutions were not prepared for inclusive education. In Cameroon in particular, it is observed that most school infrastructures are not welcoming to children with disabilities. There is little provision of new technologies to handle disabilities, and the curriculum is not contextual and culturally relevant and is examination oriented. Children and youth from ethnic minorities are not well represented in school, because the curriculum focuses more on completion of classroom examinations than the development of skills necessary for contextual and environmental adaptation (Arbeiter and Hartley 2002).

Cameroon's health sector is currently facing major challenges of the availability and distribution of health personnel to cater for its diverse population. Statistics show that there are approximately 1.1 physicians and 7.8 nurses and midwives per 10,000 populations (WHO 2010). Furthermore, there are inequalities in the geographic distribution of health workers where most rural areas and the regions of the North, Adamawa, and South have the fewest health workers. The WHO (2013) Cameroon Economic Update states that 40% of the country's doctors practice in the Center region, where only 18% of the population lives. On the other hand, the Far North region, which also holds 18% of the population, has only 8% of Cameroon's doctors.

Addressing Challenges with Sustainable Solutions

1. **Institutional changes**

The primary key to making children and youth gain access to quality education and health lies in institutional change from a centralized system of government to decentralization. Decentralization can address the challenge of fragmented institutions, poor governance, and lack of accountability in the education and health sectors of Cameroon. Decentralization will enable the local authorities, private sector, and civil society to collaborate more with the government in sensitizing the general public and in gaining more access to services for the deprived groups.

2. **Children and youth involvement in development through mediated mutual reciprocity**

For any meaningful sustainable development to take place, children and youth themselves must be active participants in the developmental process. Today's children and youth are those to herald sustainability; hence we cannot talk of any

development without getting their voices heard. For children to be active participants in their development, they themselves must be at the center of that development. The human person is not strictly shepherded by external events or other persons because children and youth have cognitive power to influence their own actions in order for them to produce certain results as they participate in development. They have the capacity to exercise control over their own thought processes and actions and those of others, motivating and affecting their actions which operate through their personal agency.

Mediated mutual reciprocity (MMR) is characterized by action that is need-interest-driven, based on learning initiated and sustained by the learner (Tchombe 2011). Children's personal initiated involvements offer new directions for their involvement. The theory (MMR) presented postulates equal responsibility to all with varying degrees of accountability. Children have the ability to monitor and control their own cognitive resources which are lost sight of when explaining their participatory roles in relation to others. Tchombe argues that the MMR explains learner's inputs as they assume responsibility and determine the direction of their learning activities in solving problems through reflecting, questioning, encouraging, negotiating, and being creative. In finding out how children and youth cope with everyday challenges, this holistic theoretical framework; the MMR is action oriented leading to the use of different techniques such as:

- Sharing of behavior based on the mutual need for collaboration and cooperation in any learning, task, or decision-making.
- Assuming a transforming role by redirecting process through initiating, negotiating, and modulating to suit individual's rhythm and modifying the learning behaviors of others.
- Monitoring a task in order to adjust one's behavior appropriately. It is an unconditional give-and-take process with no hierarchy.

Mediated mutual reciprocity is a new paradigm shift in theorizing, which views development from a child rather than adult perspective where the child demonstrates how he/she learns through influencing and effecting change initiated by their inputs. So in the learning context, they are not being dictated but being an important and equal partner in the learning game. Deprived children and youth can participate fully in different cultural activities of interests and match their needs. Figure 7.2 below illustrates mediated mutual reciprocity and engagement of the child in his or her developmental context.

MMR sees the child and adult as co-constructors of knowledge as shown in Fig. 7.2. Both are active participants, and the child is the focal point at the new knowledge that is constructed because it is the child, not the adult, that initiates development. Teachers, parents, and other significant others neglect the fact that for learning to be effective, there must be mutual reciprocity. The learning act is a symmetrical action, that is, a process that is two way and interactive with no one having a dominant position on the basis of co-constructors in the knowledge creation process. Figure 7.2 therefore enables us to understand that children are very active in

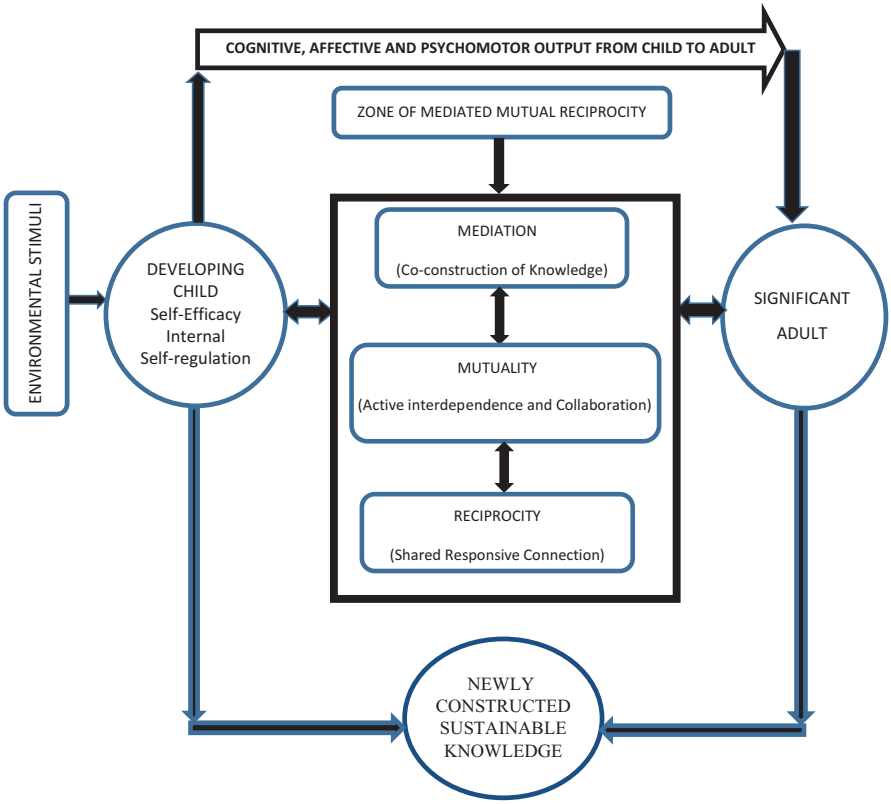

Fig. 7.2 Mediated mutual reciprocity with children and youth playing equal role toward their learning and development (Source: Tchombe, T. M. S. (2017))

the learning process and are not passive recipients of knowledge in the teaching-learning transactional process.

Thus, we cannot talk of quality health and education for deprived children and youth without identifying their roles. Mediated mutual reciprocity can help facilitate health and education through participation in controlling, negotiating, and discussing issues concerning drug abuse, alcoholism, malaria, teenage pregnancy, and sexually transmitted infections like HIV-AIDS that are key concerns of Cameroonian youth today.

The 2014 UN consultation for the implementation of post-2015 development agenda recommends the following points in relation to youth involvement:

- Youth should be empowered to speak with a collective voice for the representation of their rights and interests.
- Ensure the strategic involvement of youth representatives at all levels from policy conception through policy implementation and monitoring of development projects and program.

- Promote entrepreneurship for all categories of youth – students, pupils, and those outside the school system. Special attention should be accorded to young people with disabilities.
- Promote civic service and youth volunteerism while ensuring where necessary, legal provisions for this to be considered in youth recruitment process (United Nations 2014).

Conclusion

Cameroon is a lower-middle income country with an estimated population of 22.8 million, with a GDP of 5.5 and 5.9 percent between 2013 and 2015. The country is endowed with natural resources; nonetheless, there is slow pace of economic growth leaving about 40% of the population below the poverty line. Hence access to quality health and education remains an issue that poses serious challenges for sustainable development in Cameroon. Government has some policies on the improvement of health and education, but these have met with little or no success at the implementation level. Cameroon faces serious problems of government accountability and decentralization of services to meet the demands of the civil society. Meaningful sustainability can only be achieved if the children and youth themselves are engaged in the process of development. This chapter has highlighted key issues and challenges faced by post-2015 Cameroon in the implementation of SDGs. The chapter has proposed the mediated mutual reciprocity theory as an important theoretical perspective, whereby all children and youths' engagements in achieving sustainable development goals can be explained. In this light as developmental scientists, it is imperative to give an attention to our youth and their spaces which are quite agentive and see how we can involve them in decision-making so as to enhance sustainable development and facilitate the implementation of sustainable development goals.

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Chapter 8
Transforming the World for Mozambican Youth: Perspectives on the 2030 Agenda for Sustainable Development for At-Risk Adolescents

Silvia H. Koller, Alferes Ribeiro, Fernando Niquice, and Clarissa Freitas

Introduction

The 2030 Agenda for Sustainable Development (UNICEF 2015) establishes as one of its main objectives the promotion of peaceful, inclusive, and social justice-oriented societies, with a view to the human well-being and healthy development. It requires scientific input that provides insights for concrete action. Evidence-based actions can effectively meet demands through interventions, present better cost-benefit relationships, and constitute strategies for improving public services and policies (Freitas et al. 2015).

Significant efforts have been made in fighting poverty around the globe since the adoption of the Millennium Development Goals in 2000. Globally, the proportion of people living in extreme poverty (less than $1.25/day) declined from over a third in 1990 to 15% in 2011 and dropped to 14 percent in 2015 (INS & INE 2010; United Nations Development Program [UNDP] 2015), and the share of the population, that is, middle class (living on more than $4 a day), almost tripled during this period. Extreme poverty rates are now 14%, and nearly half of workers (48%) earned more than $4/day. The financial crisis impact on poverty and income distribution in

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countries have been difficult to track, due to the lack of actual data. Yet, despite some progress, over a billion of the world's people continue to live in poverty. Poverty rates are highest in sub-Saharan Africa and Southern Asia but remain elevated in many parts of the Global South. Globally, poverty is higher among women with adverse implications for the well-being of children (Fundo das Nações Unidas para a População 2014).

Every year, 1.4 million adolescents die from road traffic injuries, complications of childbirth, suicide, violence, AIDS, and other causes (UNICEF 2015). Some countries such as those with low- and middle-income levels are more vulnerable and deserve special attention, as do countries in situations of conflict and post-conflict. It is certain that each country faces specific challenges in its pursuit of sustainable development and improvement of people's well-being.

In 2015, UNICEF published a report in honor of those born in the year of the signing of the Millennium Development Goals, saying that now 1.2 billion children would be 15 years old. In this chapter, following the example of UNICEF (2015), we consider the adolescents and young people of Mozambique who were born around the year 2000, as case studies to describe the specific challenges they face in their pursuit of sustainable development. Mozambique faces specific challenges regarding its history and actual situation. The African Union's Agenda 2063 (The African Union Commission 2015) and the program of the New Partnership for Africa's Development (NEPAP 2015), all of which are integral to the new Agenda, will be discussed in the light of our data.

Risk and Protective Factors Among Adolescents and Young Mozambicans

Adolescents and young people around the world present risk behaviors and are exposed in different contexts to factors that cause other risks but also offer protective factors. Risk behaviors are associated with the biopsychosocial aspects of the developing person (biological, psychological, sociocultural), which provoke vulnerability (such as substance abuse and crime involvement), which hinders or delays positive outcomes (professional success, positive relationships, well-being; Straub 2014). Risk factors are related to events that happen outside of the person, which increase the probability of physical, emotional, and social problems occurrence, creating vulnerability to adverse situations (Lordelo et al. 2002; Poletto and Koller 2008). Internal or contextual protective factors alleviate internal or external risk effects. Consideration should be given to the intensity, frequency, and manner of how adolescents and young people live in their contexts.

In a large study, Ribeiro (2017) investigated risk behaviors and risk and protective factors of 796 adolescents and young Mozambicans of both sexes from three cities classified as the main urban centers of the country, due to their political and economic importance – Nampula (n = 302, 37.9%), Beira (n = 241, 30.3%), and Maputo (n = 253, 31.8%). The majority (52.7%, n = 417) were females: 69.9%

(n = 556) between 12 and 17 years and 30.1% (n = 240) from 18 to 24 years. Participants were black (n = 778, 97.8%), followed by mulatto participants (n = 17, 2.1%) and whites (n = 1, 0.1%). Following the studies carried out in Brazil, the Brazilian Youth Questionnaire/Questionário de JuventudeBrasileira (II Version, Dell'Aglio et al. 2011) was adapted to the Mozambican Portuguese (Mozambican Youth Questionnaire – Ribeiro 2017). It is composed of 77 questions, about risk behaviors, risk and protective factors, and a bio-sociodemographic description.

Risk Behaviors and Risk Factors

Substance Abuse The consumption of alcoholic beverages, illicit drugs, and tobacco appeared as risk behavior in 33.3% of the sample. The group of 18–24-year-old boys (old boys group) had higher levels of consumption (17% alcoholic beverages, illicit drugs, and tobacco) than the group of 12–17-year-old (young boys group) boys (7.3% alcoholic beverages, 1% illicit drugs, 1.5% tobacco), older girls (18–24 years old; 4.9% alcoholic beverages, 1% illicit drugs, 1% tobacco), and young girls (12–17-year-old girls; 2.9% alcoholic beverages, 1% tobacco). This precocious consumption shows how worrying this scenario can be since the sale of alcoholic beverages in Mozambique is prohibited to children under 18 (Bulletin of Republic 2013, I Series, n° 80 from October 7, 2013). The early and excessive consumption of psychoactive substances has been associated with involvement in delinquent behaviors, which can be related to poverty, lack of perspective on the future, youth unemployment, and problems to keep up with the studies, thus constituting an obstacle to achievements and full development of the cognitive and physical potential of the Mozambican youth. Drug use was significantly associated with the presence of stressful events, negative perception of the relationships with school, and living with other users in the family or community (as mentioned by Zappe and Dell'Aglio 2016). Ribeiro (2017) also found that the use/abuse of alcohol and drugs has been associated with other risk behaviors in Mozambique, such as sexual exploitation, violence, and crime, especially among young men (as mentioned by Arnaldo et al. 2015; Reisman and Lalá 2012). Family support and security constitute protective factors. However, with regard to alcohol use in family settings, these permissive attitudes could be considered as risk factors (Souza and Oliveira 2011).

Suicidal Ideation and Behavior Alarming results for young Mozambicans (16.1%; n = 102) showed the higher frequency of suicidal attempts for older girls (23%), followed by young girls (19%), older boys (19%), and young boys (8%) (Ribeiro 2017). Mozambique has an average of 17.3 suicides per 100,000 inhabitants (there are no specific numbers by age), the highest rate on the continent, while the mortality due to homicides is 3.4 persons per 100 thousand (WHO 2016). The relationship between daily smoking, illegal drug use, frequent alcohol consumption, dissatisfaction with parents, low self-esteem levels, high depression and antisocial behavior, and suicide, especially among girls, found in Ribeiro's study (2017), is also

expressed in other recent literature (Abasse et al. 2009; Braga and Dell'Aglio 2013; Kinyanda et al. 2011).

Antisocial Behavior and Violence They appeared in responses regarding participation in assaults (13.8%, $n = 9$, 6% older boys (18 to 24 years old), 2% young boys (12 to 17 years old), and 1% young girls), robberies (13.8%, $n = 39$, 8% older boys, 6% young girls, and 5% young boys), and drug trafficking (3.8%, $n = 11$, 6% older boys, 2% young girls, and 1% young boys). School failure (41.9%, $n = 329$, 86% older boys, 73% older girls, 32% young girls, and 26% young boys) and school expulsion (1.8%, $n = 14$, 20% older girls, 9% young boys, 6% young girls, and 3% older boys) were also evaluated as antisocial risk behaviors. The report on crime assessment in Mozambique published in 2012 emphasized that the combination of poverty and social inequality has been one of the causal factors for crime and violence among the youth. These acts increase as a result of social and economic marginalization, constituting violence as a way to overcome social inequalities (Reisman and Lalá 2012). Poor school performance can have negative effects on self-esteem of adolescents leading to school dropout, lack of interest in pursuing studies, and stigmatization (Amparo et al. 2008; Marques and Dell'Aglio 2013). The family environment emerged as an important risk factor for involvement in violence among youth. Approximately 27% of the participants reported having suffered some threat or humiliation and physical aggression (24.5%) within the domestic environment (Ribeiro 2017). These data are partially similar to the results obtained in Brazil with adolescents and young people in the same age group (Braga and Dell'Aglio 2012; Colaço et al. 2013).

Poverty The most evident risk factors were demonstrated by descriptive analysis of the bio-sociodemographic data on poverty. Eight-and-a-half percent of working adolescents or youth and their caregivers received a salary considered far below the national minimum (U$ 47.00). According to the 2010 Millennium Development Goals Progress Report (MDG 2010), 54.75 of the Mozambican population lived below the national poverty line, especially in the central region (60%) and in female-headed households (Republic of Mozambique, 2010). Sixty percent of the participants, however, lived with the national minimum wages or above. These data are similar to those of the last census regarding durable goods (National Statistics Institute 2017).

Situation of Girls The sociocultural condition of women in Mozambique is another risk factor that is expressed in several results of Ribeiro's study (2017). The level of schooling of young mothers (3.1%, $n = 25$ had completed higher education) is generally lower than that of their fathers (7.3%, $n = 58$ had completed higher education). It coincides with the Republic of Mozambique Report (2010), in which the illiteracy rate among women in 2004 was 66.2%, with a subtle reduction to 56% in 2009. There is also a high prevalence of child marriages (14% between 20 and 24 married before the age of 15; 48% married before the age of 18) due to poverty and cultural practices (Ribeiro 2017).

There are other aspects in Mozambique's culture that directly influence the action of risk factors among women. Gender discrimination involves ideological (e.g., patriarchal and sexism), legal (e.g., impunity for perpetrators of female victims and child marriages), and practical aspects (e.g., poverty and understanding of marriage as a protective recourse for the young girls). Early pregnancy as well as early sexual initiation has been one of the current concerns of the government and civil society. In 2011, about two-thirds of adolescents in Mozambique aged from 15 to 19 were sexually active. Of this percentage, 41% were already married, and 36% had already been mothers or had been pregnant (Arnaldo et al. 2014).The study by INSIDA (2009) found that 25% of the 15–24 year olds had had sex before age 15, while 9% of girls and 15% of boys between 12 and 14 reported having had sex (National Institute of Statistics 2017). Early maternity has been associated with numerous negative consequences, both for the adolescent herself and for the child. Pregnancy during adolescence leads to dramatic changes, generating biological, familial, schooling, and social consequences whose impact can be reflected in personal and social life. There is a higher health risk, resulting from preterm deliveries, low-birth-weight infants, high rates of fetal and perinatal mortality, maternal morbid-mortality, and abortions (Arnaldo et al. 2014). The early initiation of sexual activity, in addition to early pregnancy, is associated with contracting sexually transmitted diseases and HIV/AIDS. The prevalence of those diseases among young people and adults between 15 and 49 years is estimated to be 11.5% between 2008 and 2009, with a higher prevalence in urban areas rather than in rural areas (women 18.4%; men 12.8%, Republic of Mozambique 2010). The social factors are related to temporary or total school abandonment, reducing women's engagement into the formal and better-qualified labor market, keeping up the poverty cycle (Nascimento, 2011; Pelloso et al. 2002).

Despite these possible consequences of early pregnancy, adolescence is an important milestone in the lives of Mozambican adolescents and young girls, serving as a transitional period in the family life cycle, whereby she changes her marital status and family configuration. In Ribeiro's study (2017), it was observed that 26.3% ($n = 71$) of the sample experienced early pregnancy. The pregnancy situation during adolescence is for many of these girls what is considered a stable union, as a way of structuring the family and ensuring care for the child. In this case, the family reorganization, which results from the adolescent's pregnancy, appears as an important aspect for people with relatively low socioeconomic levels (Dias et al. 2011).

The situation of Mozambican girls, due to their substandard role in society and dominant male power relations, has been the main cause of sexual abuse. Ribeiro (2017) found that girls ($n = 35$) were at higher risk of sexual violence than boys ($n = 18$), both in the family and in the community ($\chi^2 = 4\ 0$; $p < .05$). This fact has been reported in researches from several other countries (Foshee et al. 2004; Howard et al. 2007; Irwin and Rickert 2005; Moraes et al. 2006; Pinheiro 2006; Polanczyk et al. 2003). However, in Mozambique, the Ministry of Education found that at least 41% of 15- and 19-year-olds became mothers due to early pregnancy as a result of violence and sexual abuse (Reisman and Lalá 2012). To achieve the targets of the sustainable development goals of 2030, Mozambique needs to have a broad

awareness call on the equal role of women, to develop extensive policies to combat discrimination and prejudice and to protect women citizens throughout the country. The latest statistics on high school completion rates showed improvements of 45.7% in 2005 to 47.2% in 2009 on education for girls. However, much needs to be done to improve the gender parity index in the country (República de Moçambique 2010).

Labor and Unemployment Poverty and poor economic conditions in the family result in the early transition of young people into the labor market (Ribeiro 2017). The last census in Mozambique, carried out in 2017, showed a similar conclusion, indicating that approximately 35% of children and adolescents were involved in the labor market. This tendency is greater with the increase of age, and it reaches 49.4% in the age groups of 15 to 18 years (National Institute of Statistics 2017). This scenario, in Campos and Francischini's view (2003), constitutes one of the facets of poverty and contributes to young people early engagement in the labor market at the cost of schooling, sports, and other developmental activities at this age.

Protective Factors

Self-Efficacy and Self-Esteem Ribeiro (2017) showed protective factors based on personal and social characteristics of Mozambicans, regarding especially to positive self-efficacy and self-esteem and good relations with the community (respectively, $r = .35$, $r = .44$, $p < 0.05$) and school (respectively, $r = .37$, $r = .56$, $p < 0.05$). These findings have been observed in other sociopolitical contexts (e.g., Chen et al. 2004; Frank et al. 2010; Lightsey Jr et al. 2006; Luszczynska et al. 2005; Sbicigo et al. 2012), suggesting that these constructs tend to be associated as protective factors throughout development. The Mozambican adolescents also presented expectations for the future, tending to be persistent in their tasks and in learning and motivated to achieve their goals (e.g., finishing high school, entering university, having jobs, and constituting a family, among others). In general, adolescents reported satisfaction with the quality of family support that they get from other members of the family with whom they share the same living spaces and resources and develop relations of coexistence, with affective bonds marked by a healthy and profitable relationship (Ribeiro 2017).

School and Family Attachment Engagement at school and family attachment have been considered fundamental for the healthy development of adolescents (Matos 2005; Morales and López-Zafra 2009). Mozambicans who are not engaged in vocational training and leave school early miss out on numerous opportunities, have fewer avenues to develop their potential, and become more vulnerable to poverty, exploitation, disease, and other negative repercussions, for themselves, for their future families, and for society (Ribeiro 2017; UNICEF 2003; WHO 2002). School

dropouts are also more likely to be involved in antisocial and risky behaviors, such as substance use and early sexual activity (Blum and Nelson-Mmari 2004). Young people who are more engaged at school are more likely to succeed academically and tend to adopt healthy behaviors (Oddrun et al. 2004) and engage less in risk behaviors (Murphey et al. 2004; Ribeiro 2017).

Religiosity Religiosity has played a preponderant role in Mozambican individuals' behavior, as a protective factor (Ribeiro 2017). Given that the SDGs are related to improving the quality of life of young people worldwide (and more so in LMICs), religion can serve as a protective factor against the presence of risks and reduce the vulnerabilities to social and health problems (Cerqueira-Santos and Koller 2009; Furrow et al. 2004; Smith et al. 2003; Wagener et al. 2003). Religiosity may serve as a code of conduct and allow participation in communities.

Macro-systemic Factors Adolescents and young Mozambicans face numerous difficulties, from access to education, favorable working conditions, health, and healthy community life, which makes them more vulnerable to various risks (Ribeiro 2017). However, the results express the context that reflects the culture and conditions of social and economic development from a country classified by the Organization for Economic Cooperation and Development as part of LMICs – the majority of the world. For the current 2017 fiscal year, Mozambique presents low-income economy, with GNI per capita, calculated using the World Bank Atlas method, of $ 1025 or less in 2015 (http://documents.worldbank.org/curated/en/587251468176971009/pdf/541670WDI0200810Box345641B01PUBLIC1.pdf). Therefore, in order to overcome the current social situation, Mozambique requires the commitment of the government and civil society to develop priority areas and minimize the risks and deficiencies of its population.

In the African context, in general, and Mozambican, in particular, some customs are very deeply rooted in the traditions of the communities. For this reason, some facts such as gender inequality, lack of education, early work, child marriages, early pregnancy, and psychoactive substance consumption can be considered as a social expression, that is, they are the portrait of the contexts in which they reproduce and express themselves. However, children, adolescents, and young people of both sexes are the future of the country. Therefore, combating risk factors with a view on developing a healthier future population and culture should be a focus of extreme attention. Likewise, protective factors that are based on healthy families, good quality schools, and safe communities should be the focus of Mozambique's investments as a nation. Protective factors should be reflected in the design of viable social policies to mitigate the effects of social inequalities, especially for the most deprived groups. The youth of Ribeiro's study (2017) are the expression of Mozambique's future.

How to Transform the World for Mozambican Youth: Perspectives on the 2030 Agenda for Sustainable Development

The various challenges that young people face can have both positive and negative outcomes, which may influence their development (Giusti et al. 2002; Pechansky et al. 2004; Pinsky et al. 2010). The dismal state of young people in Mozambique is a cause for concern (Niquice 2013). As evident from the profile presented in this chapter, most of them come from poor and fragile social contexts and fulfill their life demands in precarious and compromising conditions for their psychosocial well-being. They are faced with the adversities of the past and have to deal with a hostile society. Due to lack of protective public policies, youth, who experience poverty, are school dropouts, are unemployed, and have to face constant stigmatization. Therefore, they are in a situation of permanent condemnation, compromising their quality of life and even jeopardizing their survival for a productive life.

The 2030 Agenda has a set of 17 sustainable development goals (SDGs). SDG1 and SDG 2 focus on changes in the micro-system level of young people and adolescents, seeking to promote adequate living conditions for the population. These include the promotion of access to quality services for the population, such as poverty and hunger extermination. In this sense, the Mozambican population receives financial support through social assistance programs for family subsistence or scholarships. It was noted that in a population of 796 Mozambican students aged 12–24, approximately 12% reported receiving some type of financial aid (Ribeiro 2017). Furthermore, considering that 45% of the Mozambican territory has a potential for agriculture, although 80% is still used for the subsistence of the population, there is a need to invest in the development of sustainable agricultural practices (Manjama 2016).

SDGs 3 and 4 focus on promoting well-being and access to quality education. The development of leisure and education services for adolescents is characterized as an emergency action in Mozambique. Ribeiro's findings (2017) showed high levels of unemployment, school dropout, and drug use, which could be reversed if adolescents had more chances of giving positive authorship of their lives (Koller et al. 2017).

SDGs 5 to 9 seek to ensure that people have access to egalitarian opportunities, such as gender equality, and basic quality services such as drinking water, energy, adequate housing, and access to decent work opportunities. Many new initiatives are necessary in Mozambique to promote the increase of income and access to basic services, such as access to drinking water and electric energy for the entire population, especially those from the rural areas. Regarding the young, Ribeiro's participants (2017) recognized the school as a protective space. Young people who were expelled or failed from an educational institution had higher frequencies of being involved in antisocial behavior (e.g., stealing, killing, selling illicit substances). Further in the study, female participants presented higher social vulnerability indexes, compared to male participants, that are in line with the persistence of sexist and chauvinist values in Mozambican society. It should be noted that efforts are still

needed by the government and civil society to promote actions that enable girls and young women to achieve a healthy development, such as Mozambican boys and young men.

Finally, SDGs 10 to17 of the 2030 Agenda refer to actions that must be carried out at a macro-systemic level. In this perspective, it is necessary the promotion and the adoption of national policies in order to raise awareness and promote the preservation of the ecosystem and the appropriate use of natural resources.

Current Challenges for Promoting Positive Development of Adolescents and Young People in Mozambique

First challenge: Knowledge production and development of interventions based on locally substantiated evidence Knowledge production in sub-Saharan Africa is still a challenge to overcome. According to the World Bank, the continent's participation in global production of knowledge consists of 2.7% of published articles, a small percentage when compared to other regions (World Bank 2009). In social sciences area, Cardoso (n.d.) indicated only 1% of world scientific production in 1987, declining to 0.7% in 1996 in this region. This problem is also evident in Mozambique and directly reflects on issues related to the study of human development. Most of the available scientific knowledge comes from the Northern Hemisphere and other regions of the world, as can be attested in the references used to conduct the research described in this chapter. Of course, these gaps are reflected in studies and proposals for intervention. It is believed that structured interventions implemented in the daily life contexts of young people can serve a protective function and aid in avoidance of risks. Social reintegration interventions for young people deprived of freedom and choices enhance chances of work and education (Blicharska et al. 2017; Koller et al. 2017).

Second challenge: Research topics to focus on youth developmental issues There is a need for conducting research on current developmental issues pertaining to the ecological realities of the young people. Several government actions, from non-governmental organizations or from private institutions, rely on culturally inappropriate developmental models and in many cases without prior studies on how to apply them in the context of Mozambique. However, priority should be given to studies that describe development dynamics in relation to the local context of Mozambique, which may favor a deeper understanding of "development in context" (Bronfenbrenner 2004) and the construction of paradigms that are consistent with their reality. Studies based on local evidence, on family dynamics, schooling and work processes, social support networks, elaboration and implementation of public policies for children, adolescents and young people, gender issues, prejudices and discrimination, overcoming vulnerabilities, and risk and protective factors, are extremely relevant and should be funded by sponsoring agencies.

Third challenge: Investment in training of researchers in human development Overall, the number of researchers in Mozambique is still very limited. Data from the Ministry of Science, Technology, Higher Education, and Professional Technicians indicated that in 2015 there were 18 public higher education institutions with a total of 3952 full-time faculty members. Of these, only 15% (n = 606) had a doctoral degree in the area of social and human sciences. With the recent phenomenon of creation and expansion of private higher education institutions that is registered in Mozambique, a significant number of these professors/researchers also provide services to private education. What is evident is that this group is more applied to teaching rather than researching.

Information that draws attention is the fact that, in Mozambique, there are no Masters and Ph courses in Human Development Psychology. The introduction of education at this level can contribute to specialists training and to the promotion of research in the area. Based on the data on the Mozambican youth, investment in the training of researchers in human development is considered a priority for the improvement of quality of life.

The challenges should be taken into account in the debate on the materialization of the 2030 Agenda goals. Ensuring quality of life for individuals of all age groups (SDG 3), ensuring quality education for all (SDG 4), reducing internal inequalities and between countries (SDG 10), and promoting inclusive and social justice-oriented societies (SDG 16) cannot happen without a deep and sustained knowledge of local realities (first and second challenges) and a strong investment in social scientists training to help understand these contexts (third challenge). The 2030 Agenda presents relevant global issues that must be taken into account by governments in guiding collective destinations, but at the same time, there is a challenge to make these mechanisms applicable to the social and economic specificities of each place. A significant contribution in this sense must be given by academics in general and, in this case, by social and human development scientists.

Much more has to be made to improve the lives of youth in Mozambique. Developmental scientists in Mozambique have to include SDGs in their research agendas and join hands with the government for effective realization of the SDGs to improve the state of children and youth there.

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Chapter 9
Understanding Factors Affecting Well-Being of Marginalized Populations in Different Cultural Contexts: Ethnic and National Identity of Roma Minority Youth in Europe

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In September 2015, the United Nations adopted the Sustainable Development Goals (SDGs) for 2015–2030. The SDGs reflect the striving for a world that is "just, equitable and inclusive" (United Nations 2014, p. 7) while recognizing that far too many children and youth live on the margins, excluded from full participation in society. These include ethnically diverse populations and people from under-resourced communities, like (Roma) minority youth across Europe who face deep

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discrimination. This chapter addresses the SDG goals on disadvantaged groups to promote well-being among Roma minority adolescents in Albania, Bulgaria, the Czech Republic, Italy, Kosovo, and Romania. We focus on differences in contextual conditions and implications for ethnic identity (Erikson 1968; Phinney 1989; Rivas-Drake et al. 2014) and national identity (Phinney and Devich-Navarro 1997) and relations with positive psychological functioning of marginalized youth.

Two conceptual frameworks guided our work. First, we focused on the intersection of three of the 17 SDGs (United Nations 2015), namely, SDG 3 (good health and well-being), SDG 4 (quality education), and SDG 10 (reduced inequalities). Taken together, these SDGs refer to building sustainable societies that promote people's well-being, global citizenship, and appreciation of cultural diversity as well as equal opportunity by eliminating discriminatory laws, policies, and practices. All of these aspects are key pillars for improving social inclusion among vulnerable disadvantaged youth and may be also conceptualized as global challenges with implications for long-term psychological, behavioral, and educational outcomes.

Second, our chapter was guided by the strengths-based, positive youth development (PYD) perspective, which we drew upon to outline resources for optimal psychological functioning. PYD is a burgeoning line of research (mainly US based) that focuses on the strengths of young people with the aim of better equipping them for the transition to adulthood. Essential to PYD are internal (individual and psychological characteristics such as young people's commitment to learning, social competencies, and positive identity) and external (contextual and relational features such as support, empowerment, and expectations) developmental assets (Lerner et al. 2015; Silbereisen and Lerner 2007). All developmental contexts of young people (e.g., family, school, and community) have resources that can be aligned with their strengths, and this synergy can promote PYD (Lerner 2017). Importantly, identity is an internal developmental asset that promotes PYD and healthy, adaptive outcomes for young people (Scales 2011). However, the potential alignments between ecological resources and personal strengths depend on the specific larger contexts in which these people are embedded. Thus, in this chapter, we relied on the PYD approach in view of the Berry's (2017) perspective on mutual intercultural relations in plural societies, suggesting how larger contexts (e.g., sociopolitical) can influence proximal ecologies.

Applying both the SDG and PYD perspectives to the study of marginalized populations like Roma minority youth is essential to identify psychosocial and contextual sources and pathways of optimal wellbeing and to promote relevant interventions in context of severe stigmatization. Framed from this integrative approach, we add to prior efforts by documenting under which conditions positive adaptation occurs (Marks et al. 2014) and particularly by advancing knowledge about the interrelations between ethnic and national identities and positive development of Roma youth across a variety of cultural contexts as a basis for effective interventions. This emphasis on individual and context relations as well as on theory and action integration clearly couples with advances in the developmental science, referring to "the dynamic interplay of processes across time frames, levels of analysis, and contexts"

(Cairns et al. 1996, p. 1), including, among the others, ethnic/cultural/racial identity processes (Arnett 2002).

In this line, developmental science provides relevant information on identity formation, psychological functioning, and interventions by describing, explaining, and optimizing positive change across the life span (Eichas et al. 2017; Koller and Verma 2017). Within the developmental science, significant work with socially marginalized youth suggests that PYD interventions can provide opportunities for minority youth growing up in disempowering contexts to discover their strengths and create own solutions to life challenges. Positive identity development operationalized as the emergence of a life goal narrative and youth's self-knowledge proved to be crucial for an intervention effect on life goal development through change in self-discovery (Eichas et al. 2017). Thus, PYD interventions should increase efforts to help youth understand feelings associated with discovering their potentials as enhancing youth's insight into their strengths helps them incorporate these strengths into their life goals. We draw on such relevant work to highlight how optimal outcomes maybe come to pass in a unique and underrepresented context of marginalized youth.

The Roma in Europe and in the Countries of Study

Roma mostly reside in Central and Eastern Europe, but they are also significantly present in Spain, France, the United Kingdom, Greece, and Italy (Council of Europe 2012). The Council of Europe (2012) reports between 6 and 16 million Roma, making them the largest ethnic minority in Europe. Yet, Roma are characterized by poverty, high-risk health problems, social exclusion, civic disengagement, and sociopsychological vulnerability (European Commission 2016). Notwithstanding this common ground, differences in Roma populations and their integration exist among different European countries. Roma in *Albania* range from 1300 up to 120,000 out of the 3.4 million national populations (Koinova 2000). Although officially recognized ethnic-linguistic minority, Roma suffer severe social and economic deprivation, high rate of unemployment, and poor living conditions (Council of Europe, 2007). Similarly, in *Bulgaria*, Roma represent approximately 800,000 people out of the national population of nearly 7 million (Bulgarian National Statistics Institute 2011) and had experienced severe assimilation campaigns and difficult life conditions (Civil Society Monitoring Report Bulgaria 2013). A slightly different situation exists in the *Czech Republic*, where approximately 400,000 Roma are nationally recognized minority whose needs are addressed by social policy measures supporting the Roma language, culture, and identity (Civil Society Monitoring Report Czech Republic 2013). In *Italy*, although Roma population consists only of approximately 180,000 people out of the total of 65 million Italian populations (Council of Europe 2013), there are the highest anti-Roma sentiments compared to the other European countries. As reported by Pew Research Center (2014), the large majority of Italians (85%) have unfavorable opinions of the Roma who live in their

country (see also European Commission against Racism and Intolerance 2012). The Roma in *Kosovo* represent approximately 40,000 people out of the 2 million national population (Tcherenkov and Laderich 2004), being the most vulnerable group that, after the war in Kosovo, either remained marginalized or emigrated. Currently, there is a lack of effective institutional actions for Roma in areas of education, employment, health, and social affairs (European Roma Rights Centre, 2011). Finally, *Romania* hosts 2 million Roma out of the total of about 20 million Romanian populations (National Institute of Statistics Romania 2011). Roma are a national minority with representation in public and political life but still the socially and economically most disadvantaged group.

Together, these data confirm what kind of challenges Roma youth have to face in terms of SDGs and positive developmental adaptation across the countries of this study. However, it also can be concluded that policies toward integration of Roma differ among these countries, with the Czech Republic being more active, followed by Romania, Albania, Kosovo, Bulgaria, and finally Italy, characterized by a rather segregationist policy. In view of this, we set out to study ways in which such contextual diversity might have indirect implications for Roma youth's identity and psychological functioning within the SDG and the PYD frameworks as to examine what enabling conditions and policies are required to empower Roma communities.

Theory and Research on Ethnic and National Identity

Establishing a coherent sense of identity is a core developmental task for adolescents with achievement (firm commitment after identity exploration) and diffusion (neither engagement in exploration nor commitment) as polar points of this development (Erikson 1968; Marcia 1980). Youth with minority or culturally diverse ethnic background have to achieve both ethnic and national identities (Crocetti et al. 2011). Ethnic identity refers to attitudes, feelings, and behaviors toward own ethnic group (Erikson 1968; Phinney 1989). National identity sees the identification with the (host) culture, including feelings of belonging and commitment to the host society where an ethnic minority group lives (Phinney and Devich-Navarro 1997). Both ethnic and national identities relate positively to psychological well-being of youth (Rivas-Drake et al. 2014). What is more, for ethnic minority groups, well-being is most enhanced when there is a coherent interaction among both these identities. When youth achieve stable sense of both ethnic and national identities, they experience a two-dimensional bicultural identity where ethnic heritage culture maintenance and national host culture adoption are negotiated (Berry 2017). These perspectives are in line with the PYD approach postulating the importance of an integrated identity as an internal asset that promotes positive psychological functioning (Scales 2011). However, identity resources can optimally intertwine and effectively exert their influence only if there is an alignment with the developmental contexts in which youth are embedded (Lerner et al. 2015, 2017). As a consequence,

it is reasonable to assume that, in contexts that promote more policies addressing multiculturalism and the safeguard of minorities, there will be more similar levels of ethnic and national identities as well as more positive associations between both identities and psychological well-being than in contexts with few culturally inclusive policies. Thus, in this study we are interested in potential differences of ethnic and national identities according to the contextual conditions of the six European countries hosting Roma populations.

Self-Esteem

Self-esteem has been one of the most widely studied psychological well-being aspects related to identity. Notable theorists have provided definition of this construct in terms of individuals' personal feelings of worth (James 1890; Rosenberg 1979). In the current chapter, self-esteem is conceptualized as positive and negative orientation toward the self. The concept of self-esteem is particularly salient in adolescence due to important changes (e.g., physical, cognitive, and social) and new experiences and social demands that may influence psychological well-being. In fact, for adolescents, in the midst of these experiences, self-esteem is considered an index of psychological well-being (Žukauskienė et al. 2015). We build on this prior seminal work by investigating self-esteem conceptualized as negative and positive appraisal of the description that youth attach to their self and its relationships to ethnic and national identity among Roma. As said in previous paragraphs, we base our reasoning on PYD framework proposing positive association of ethnic and national identities with self-esteem when contexts of young people can be synergistically aligned with their identity resources. Here, we try to analyze how this association varies according to the different contexts of study.

Main Goals

Framed from our integrated SDG and PYD framework, this chapter sets out to investigate developmental processes (e.g., identity assets) and optimal outcomes (e.g., self-esteem) among oppressed minority group to see if findings replicate existing developmental models and where the contextual specifics make a difference. We also relied on the Berry's (2017) framework proposing that the psychological adaptation at the individual level is related to intercultural relations among groups in the lager society as well as the sociopolitical context. Within this approach, we addressed two main goals regarding the examination of the salience of ethnic and national identities and their relationships with self-esteem of Roma youth. First, we expected more stable integration of both Roma ethnic and national identities (in terms of similar mean levels) in countries with more positive group relations and explicit integration policies (e.g., the Czech Republic) (Hypothesis 1a) and more significant

differences in countries with lower group relations and lack of effective policies toward Roma integration (e.g., Albania, Bulgaria, Italy, Kosovo, and Romania) (Hypothesis 1b). Second, we expected positive associations of Roma ethnic and national identities with positive self-esteem in the Czech Republic (Hypothesis 2a), where the more favorable contextual conditions can facilitate the alignment of young people's ecology (e.g., school, peer groups, and out-of-school programs) with their identity resources and, in turn, promote well-being. We also expected that especially national identity may be positively related to optimal self-esteem in the other countries due to stronger assimilation pressure (Hypothesis 2b), even though we knew that differences might exist in light of the specific country contexts.

Roma Samples and Data Collection

Data for this chapter were drawn from a larger multinational study designed to examine contextual predictors of optimal well-being among Roma youth across European countries. Participants were 425 adolescents with Roma background (M_{age} = 14.68 years, *SD* = 2.01) of whom 87 in Albania, 82 in Bulgaria, 58 in the Czech Republic, 82 in Italy, 44 in Kosovo, and 72 in Romania (see Table 9.1). Participants were recruited from public schools in major towns with a large number of Roma in Albania (Tirana, Durrës, and Elbasan), Bulgaria (Simeonovgrad, Harmanli, and Haskovo), the Czech Republic (Ostrava, Brno), Kosovo (Pristina), and Romania (Sibiu, Hunedoara, and Prahova). In Italy (Palermo), participants (54%) were also recruited from camps where they were living.

Table 9.1 Means and standard deviations for key variables of study among Roma adolescents across countries

	Albania	Bulgaria	Czech Republic	Italy	Kosovo	Romania
	n = 87	*n* = 82	*n* = 58	*n* = 82	*n* = 44	*n* = 72
Age, mean (*SD*)	14.23 (1.07)	15.79 (1.40)	14.43 (1.10)	15.27 (1.91)	14.25 (1.75)	13.70 (3.32)
Gender %						
Female	52	65	55	38	52	36
Male	48	35	41	58	48	64
Variables, mean (*SD*)						
Identity						
Roma	2.61 (1.61)	2.91 (1.18)	3.63 (0.93)	4.40 (0.41)	3.02 (1.49)	1.21 (0.78)
National	4.32 (1.02)	3.42 (1.16)	3.05 (1.05)	2.42 (1.06)	2.51 (1.49)	4.26 (0.69)
Self-esteem						
Positive	3.03 (0.72)	3.05 (0.57)	2.73 (0.76)	2.90 (0.27)	3.36 (0.72)	3.25 (0.56)
Negative	2.29 (0.77)	2.54 (0.64)	2.43 (0.69)	2.19 (0.20)	2.25 (0.90)	2.04 (0.66)

Prior to data collection, local school authorities, families, and adolescents were informed about the purpose and methods of the study to acquire their consent. Upon agreement and parental signed approval, adolescents filled out the questionnaire during regular school hours or in an appropriate and agreed place.

Sociodemographics. Participants in all countries provided information on their ethnicity, age, socioeconomic status (SES; based on participants' parental education), and gender.

Roma ethnic identity was measured with the Roma Ethnic Identity Scale (Dimitrova et al. 2017) to investigate Roma identity. The Roma Ethnic Identity Scale contained items such as "I see myself as Roma" and "I feel strongly connected to Roma people." The scale had excellent internal consistencies with values between .83 and .97 across Roma samples. The answers were given on a 5-point Likert scale, ranging from 1 (*completely disagree*) to 5 (*completely agree*).

National identity was measured with the National Identity Scale (Dimitrova et al. 2017) specifically created to investigate national identity among Roma groups. The National Identity Scale included items like "I see myself as Albanian/Bulgarian/Czech/Italian/Romanian" and "I feel strongly connected to Albanian/Bulgarian/Czech/Italian/Romanian people." The internal consistencies ranged from .72 to .97 across Roma samples. The answers were given on a 5-point Likert scale, ranging from 1 (*completely disagree*) to 5 (*completely agree*). Both identity measures for the present study have been previously used in work with Roma youth to comprehensively assess ethnic and national identity (Dimitrova et al. 2017). Items were scored so that higher scores indicated greater levels of ethnic and national identity endorsement, respectively.

Self-esteem was measured with the Rosenberg's Self-esteem Scale (Rosenberg 1979) composed of ten items on a 4-point Likert scale of 1 (*strongly disagree*) to 4 (*strongly agree*). Half of the items (e.g., "On the whole, I am satisfied with myself"; "I feel that I have a number of good qualities") are positively scored so that higher scores indicated greater levels of positive self-esteem. Other half of the items (e.g., "At times I think I am no good at all," "I feel I do not have much to be proud of") are negatively scored with higher scores suggesting greater levels of negative self-esteem. As extant research using factor analyses suggests two separate factors associated with positively and negatively worded items (Marsh 1996), we used two factor model to evaluate positive and negative self-esteem. For the Roma groups examined in this study, coefficient alphas ranged from 0.67 to 0.74.

Data Analyses and Main Findings

Preliminary analyses tested for cross-cultural equivalence across groups. Structural equivalence was evaluated with Tucker's phi (above .90 as acceptable and above .95 excellent) (van de Vijver and Leung 1997) and checked through comparing each

group factor solution. The values of Tucker's phi across Roma groups ranged from .99 to 1.00 for Roma identity, from .98 to 1.00 for national identity, and from .99 to 1.00 for self-esteem. We can conclude that all groups showed a very good structural equivalence and, therefore, can be compared.

The first set of hypotheses regarding the mean levels of Roma ethnic and national identities across samples was tested via paired samples *t*-test for each Roma group. The effect size was calculated by Cohen's *d* (Cohen 1988). Roma identity was significantly higher than national identity for adolescents in the Czech Republic, $t(47) = 2.44$, $p < .01$, Cohen's $d = .45$, and Italy, $t(78) = 15.40$, $p < .001$, Cohen's $d = 2.37$. Contrariwise, results showed that national compared to Roma ethnic identity was higher for participants in Albania, $t(77) = 7.25$, $p < .001$, Cohen's $d = 1.17$; Bulgaria, $t(76) = 2.11$, $p < .001$, Cohen's $d = .39$; and Romania, $t(70) = 22.70$, $p < .001$, Cohen's $d = 4.09$. No significant difference emerged in Kosovo.

The second set of hypotheses (associations of Roma and national identities with self-esteem across groups) was tested by bivariate Pearson correlations and hierarchical regression analysis. Table 9.2 presents bivariate correlations among all study variables for Roma youth in each country. As can be seen there, Roma identity was positively and significantly related to positive self-esteem for youth in the Czech Republic, while this association was not significant for all the other countries. National identity in the Czech Republic was positively correlated to self-esteem, although not significantly due to the small sample size. Also, national identity was positively and significantly associated to positive self-esteem for adolescents in Albania, Bulgaria, and Romania, while the link was significantly negative in Kosovo and substantially absent in Italy. With regard to the other relationships, the association between Roma ethnic identity and negative self-esteem was positively significant for adolescents in Bulgaria and Kosovo, while it was not significant in Albania, Czech Republic, Italy, and Romania. Finally, the relationship between national identity and negative self-esteem was positive and significant for youth in Albania and Czech Republic, was negative and significant in Romania, and was nonsignificant in Bulgaria, Italy, and Kosovo.

Next, we run hierarchical regressions and tested for moderations by participants' gender. First, we performed separate hierarchical regressions by country to explore the effects of Roma and national identity and gender on self-esteem (see Table 9.3). In Albania, national identity was positively related to positive self-esteem, $\beta = .69$, $p < .001$, and negative self-esteem, $\beta = .29$, $p < .001$, with no effects of Roma identity or gender. The results for Bulgaria showed significant positive effects of Roma identity on negative self-esteem, $\beta = .42$, $p < .001$, whereas national identity was positively related to both positive self-esteem, $\beta = .44$, $p < .001$, and negative self-esteem, $\beta = .30$, $p < .001$. In the Czech Republic, national identity was positively related to negative self-esteem, $\beta = .34$, $p < .001$, and Roma identity to positive self-esteem, $\beta = .46$, $p < .001$. In Italy, there not significant relations among tested variables, whereas in Kosovo national identity was negatively related to positive self-esteem, $\beta = -.44$, $p < .001$) and Roma identity was positively related to negative self-esteem, $\beta = .47$, $p < .001$. Finally in Romania, there was a positive relationship between national identity and positive self-esteem, $\beta = .37$, $p < .001$.

Table 9.2 Pearson correlations among all key study variables for Roma adolescents across countries

	Albania				Bulgaria				Czech Republic				Italy				Kosovo				Romania			
	1.	2.	3.	4.	1.	2.	3.	4.	1.	2.	3.	4.	1.	2.	3.	4.	1.	2.	3.	4.	1.	2.	3.	4.
1. ROI	–				–				–				–				–				–			
2. NI	−.13	–			−.41**	–			.01	–			.03	–			.05	–			−.17	–		
3. PSE	−.03	.69**	–		.06	.36**	–		.46**	.23	–		.00	.04	–		.09	−.40**	–		−.10	.38**	–	
4.NSE	.08	.23*	.27*	–	.28**	.14	.45**	–	−.01	.34**	.16	–	.04	−.03	−.51**	–	.47**	−.01	.22	–	.10	−.22**	−.26*	–

Note. *ROI* Roma identity, *NI* national identity, *PSE* positive self-esteem, *NSE* negative self-esteem. *$p < .05$, **$p < .001$

Table 9.3 Beta coefficients of the regression models of identity variables effects on self-esteem

	Albania	Bulgaria	Czech Republic	Italy	Kosovo	Romania
Identity	Positive self-esteem					
Roma	.00	.22	.46***	−.04	.-01	−.03
National	.69***	.44***	.22	.04	−.44***	.37***
	Negative self-esteem					
Roma	.06	.42***	.08	.07	.47***	.08
National	.29**	.30**	.34*	−.02	.-07	−.15

*$p < .05$, **$p < .01$, ***$p < .001$

We also run a hierarchical regression at an aggregate data level to check whether country moderated the results. There were significant positive effects of national identity on positive self-esteem, $\beta = .25$, $p < .001$, only. We can conclude that identity and self-esteem present scattered configurations across countries that possibly reflect differences in contextual conditions of various Roma groups.

Conclusions

This chapter analyzed the salience of ethnic and national identities and their relationships with self-esteem in Roma adolescents living in Albania, Bulgaria, the Czech Republic, Italy, Kosovo, and Romania. We used integrated SDG and PYD framework taking also into account the Berry's (2017) intercultural relation perspective and expected that levels of ethnic and national identities as well as associations between both identities and psychological well-being vary depending on specific contextual conditions of the six European countries of this study. We were able to show differences in identity endorsement and its relationships with well-being of Roma youth that arguably reflect differences in local contexts and policies of these countries. In our approach, these differences can facilitate or not successful alignment of developmental ecology (e.g., school, peer groups, and out-of-school programs) with potential internal assets of Roma youth, such as ethnic and national identities.

First, we found that Roma adolescents in the Czech Republic showed small to medium difference (see the effect size) in the endorsement of their Roma and national identity, with the former slightly prevailing. An analogous result was observed for Roma participants in Bulgaria, while large differences were found in Albania, Romania, and Italy. However, in contrast with the Czech Republic, in Bulgaria, Albania, and Romania, national identity was higher than ethnic identity. In Italy, like in the Czech Republic, ethnic identity was stronger than national identity. No difference was observed for Roma adolescents in Kosovo. These findings partially support our expectation.

As already mentioned in the introduction, the Czech Republic is the country with a more active integration policy promoting the Roma language, culture, and identity (Civil Society Monitoring Report Czech Republic 2013). As Berry's and the PYD

approaches predict, these conditions offer the opportunity for a more positive and balanced intertwinement of identity assets. In the Czech Republic, Roma and national identities can act quite similarly as relevant sources of identification for Roma youth. Further, in countries with unfavorable integration conditions, such as Albania, Romania, and Italy, Roma and national identities seem to act in substantially non-integrated ways. Specifically, in Albania and Romania, national identity is prevalent compared to ethnic identity, while it is the opposite in Italy. These findings can be explained in terms of local contexts where Roma youth live. Although in Albania and Romania integration policies are still lacking, it is possible to observe some advancement (Roma are officially recognized as ethnic-linguistic minority in Albania and have representation in public and political life in Romania). In such contexts, Roma people seem to consider the national host culture as the best source of identification (Zamfir 2014). In Italy, the creation of Roma camps and the high anti-Roma sentiments (Pew Research Center 2014) suggests segregation and marginalization of Roma people. In this case, developing a strong sense of belonging to the ethnic group seems to be the more functional strategy of identification.

This is in line with qualitative data we collected in our larger research, by asking Roma youth to provide potential free self-descriptions. Italian Roma youth mainly used statements referring to the category of collective group membership (e.g. "I'm rom" or "I feel discriminated because I'm Rom"). Such results mirror, to some extent, both the Rejection-Identification Model (Branscombe et al. 1999) and the Rejection Dis-identification Model (Jasinskaja-Lahti et al. 2009). In fact, the former postulates that ethnic heritage identity is an important resource among ethnic minority groups due to discrimination and rejection on the basis of their group membership. The latter provides evidence for weak national identity of ethnic minority groups who are less likely to identify with their host country due to rejection of their ethnic group. Altogether, this suggests that when the contextual conditions do not facilitate the positive alignment between internal and contextual assets of minority people, then other factors (with related models) may intervene in explaining their identification processes.

However, our expectations were not supported by findings from Bulgaria and Kosovo. Particularly, we expected parallel results for these countries compared to Albania and Romania in that they share a communist and postcommunist history. Two main interpretations are possible. Bulgaria has endured deep political and economic instability along the transition from communist to capitalist-based economy, more than the nearby Romania where there is much more positive growth (The World Factbook 2011). The Bulgarian national identity is still vastly interconnected with the communist identity (Verdery 1991) and therefore not fully defined in terms of a unique national pride. Thus, although it represents an important source of identification for Roma adolescents considering the lacking of adequate policies for their integration, at the same time, it is not valued very differently from ethnic identity. Similarly, and perhaps more remarkably, Kosovo is a very recent state with still a low degree of national identity development. For Roma adolescents from both countries, the lack of substantial differences between ethnic and national identities can be interpreted as the contextual result of difficult definitions of national identity.

We also observed relevant positive associations of Roma and national identities with positive self-esteem among Roma adolescents in the Czech Republic, although the link including national identity was not significant due to low sample size. Also, we found no significant associations between ethnic identity and positive self-esteem in all the other countries. National identity was positively associated with positive self-esteem in Albania, Bulgaria, and Romania, while a negative relationship in Kosovo and no connection in Italy emerged. These findings generally support our expectation with some exceptions. In fact, as our integrated framework proposed, the associations of ethnic and national identities with positive self-esteem seem to depend on the contextual conditions in which they occur. In a more favorable context in terms of integration policies such as the Czech Republic, both identity resources relate to positive psychological functioning, while in more unfavorable contexts, ethnic identity may not be a source connected with optimal adaptation for Roma youth. Compared to ethnic identity, national identity represents, however, a more effective opportunity for positive development of Roma youth also in disadvantaged contexts, unless there are major problems related to national identity definition like in Kosovo or concrete segregationist policy like in Italy. Again, our findings seem to suggest that explanations for the links between identity resources and well-being depend on the specificity of the country contexts, facilitating or not the synergistic alignment between Roma youth's ecology (e.g., school, peer groups, and out-of-school programs) and their identity resources.

Finally, we found positive links between ethnic identity and negative self-esteem among Roma adolescents in Bulgaria and Kosovo, while no significant relationships were revealed in the other countries. Excluding the favorable context of the Czech Republic, Bulgaria and Kosovo are contexts where no advancements are apparent in terms of integration policies when compared to Albania and Romania, where ethnic identity may be, to some extent, considered a resource nonassociated with negative self-esteem because of some recognitions for Roma people. Moreover, in Italy, ethnic identity seems a relevant resource deriving from the conditions of high and concrete marginalization (Italy is called the land of apartheid camps) so that it is highly understandable the missing links between ethnic identity and negative well-being, as suggested by the Rejection-Identification Model (e.g., discrimination and rejection of the dominant group strengthenlinks and identification with own culture as a coping strategy for enhanced well-being; Branscombe et al. 1999). Possibly, these differential characteristics explain our findings.

We also found positive associations between national identity and negative self-esteem in Albania and the Czech Republic, while no links emerged in Bulgaria, Italy, and Kosovo; furthermore, a negative relationship was observed in Romania. These findings suggest that in contexts presenting active integration policies (such as in the Czech Republic) or at least some advancements in this field (such as in Albania), national identity may be related to negative adjustment for Roma youth. However, when these advancements, although in an ambiguous way, include the representation of Roma minority in public and political life (such as in Romania), national identity may be connected with less negative psychological functioning. Also, in contexts where national identity is debated (such as in Bulgaria or Kosovo)

or where the high concrete rejection of Roma prevents them to develop a sense of belonging to the national dominant group (such as in Italy; see Jasinskaja-Lahti et al. 2009), links between national identity and negative well-being are not relevant and therefore not significant. However, despite this evidence, these findings appear to be ambiguous and deserve further exploration in future research.

Limitations, Strengths, and Implications

Our chapter suggests that ethnic and national identities can be regarded as both psychological resources and challenges for youth with Roma background. In line with Berry's (2017) and PYD approach (Lerner 2017), these identity resources can optimally intertwine and effectively relate to positive psychological functioning depending on the contextual conditions (e.g., in terms of integration policies), in which the Roma community lives. Yet, some limitations need to be acknowledged. First, mixed methods enquiries gathering both quantitative and qualitative data on identity among Roma could further improve our understanding on their identity. Second, we cannot generalize our findings to all Roma youth, and future extensions may sample Roma youth in their community setting in addition to school-based survey. Third, a direct measurement of how our Roma participants experience everyday discrimination and rejection might be particularly valuable (Dimitrova et al. 2015). Such additional measures might add conceptual complexity in testing the theoretical framework used in this chapter.

However, a number of strengths are noteworthy. While previous studies have been limited with respect to sample selection as most investigations have tended to group all multiethnic participants into one category with large within-group variability, our chapter utilized a large sample of the same minority population in six European countries. Moreover, it focuses on Roma adolescents, an underrepresented population in empirical research, due to their marginalized context and difficult-to-access settings. Next, this chapter advances our knowledge about how ethnic and national identities are related to enhanced well-being of Roma adolescents and suggests how different theoretical perspectives (e.g., PYD and intercultural relation perspective) can be integrated to study factors affecting well-being of marginalized minority groups.

In terms of implications, we need to promote Roma youth's well-being, citizenship inclusion and equal opportunity (as our initial SDG framework suggested), as well as positive identities at individual and group levels. This would represent a way to better ensure a good start in life by widening the evidence for optimal adaptation. However, there is also the parallel necessity to eliminate discriminatory policies and practices at societal and political levels. Thus, researchers, practitioners and social workers, policy makers, and institutions interested in well-being of marginalized minority youth should work in a systematic way for the realization of SDGs within the frame of their professional specificities. Policy makers and researchers should further contribute to better understanding of how social policies can promote positive

psychological functioning among Roma youth. This is particularly urgent for Roma, who are internationally recognized to be those most in need of support; therefore, improving integration through positive identity is one of the foremost policy issues in the European Union Framework for National Roma Integration Strategies up to 2020 (European Commission 2011).

In this line of reasoning, developmental science can provide an important help to bridge gaps between theoretical knowledge and application, by illustrating which identity dynamics (or other relevant factors) and which intervention programs can provide opportunities for minority youth growing up in disempowering contexts. However, this help should integrate the construction of new communities of trust, where people can exchange knowledge and experience, intercultural dialogue is encouraged, and inclusion policies can be directly discussed with the minorities to produce reciprocated agreements. Only then the bicultural integration of both ethnic and national identities may bring relevant implications for sustainable well-being among Roma youth in line with the SDG goals as a way to promote inclusive and flourishing contexts for this vulnerable group and assure their full participation in European societies.

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Chapter 10
Community Dialogues as a Strategy for Identifying and Addressing Child Protection Needs in Shinyanga, Tanzania

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Introduction

Millions of children worldwide experience conditions that compromise their well-being and development (Grantham-McGregor et al. 2007). Most of these children live in low- and middle-income countries (LMICs), where exposure to violence, neglect, and abuse compromises their well-being. Protection of children from all forms of exploitation, abuse, violence, and neglect is a fundamental right guaranteed by the Convention on the Rights of the Child (Cohen 1989). Yet, mistreatment remains an all too real part of life for children globally (Fang et al. 2015). In 2015, the United Nations General Assembly committed to 17 ambitious Sustainable Development Goals (SDGs) as part of the 2030 Global Development Agenda (United Nations 2015). Targets under multiple SDGs (refer to Appendix A) are directly relevant to child protection issues. For example, under SDG Goal 4, education facilities are intended to be safe, inclusive, and effective learning environments for children, including girls and children with disabilities. SDG Goal 5 aims to eradicate violence and other forms of harm against girls and women, including child marriage and sexual abuse. SDG Goal 11 aims to provide access to safe and inclusive community spaces for all, including children, girls, and children with

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disabilities. Other relevant SDG goals include Goal 8 (e.g., eliminate harmful child labor) and Goal 16 (e.g., end abuse and violence against children).

In recent decades, developmental science has both been concerned with and accumulated a wealth of evidence around factors that support and harm child development – many of which overlap substantially with the SDGs, placing developmental scientists in an apt position to contribute to the realization of these goals and targets. However, traditional research methodologies from the field of developmental science need to be complemented by participatory, reflective, and applied approaches that have evolved in the international development sector, particularly in the Global South, in order to generate knowledge that is grounded, valid, nuanced, and meaningful. Similarly, community-based interventions, developed and led by local grassroots institutions and informed by contextually grounded knowledge, are more likely to be responsive, impactful, and sustainable than top-down initiatives developed by people with limited understanding of local contexts. These participatory approaches are particularly crucial for interventions intending to protect and support children, whose voices have traditionally been ignored – even in research and programming directly about or for them.

In this chapter, we offer community dialogues as a participatory research and program development strategy through which developmental scientists and local community partners can collaboratively surface, discuss, address, and evaluate child well-being issues in their communities. The chapter is structured as follows. In this introduction section, we outline our conceptual frameworks, introduce community-based organizations, describe community engagement strategies more broadly, and present our case study from Shinyanga, Tanzania. The following methodology section provides details on the sample, data collection methods, and analytic approach in our case study. In the following section, we share key findings around the factors that harm and support children's well-being in different community spaces in Shinyanga. Finally, we reflect on strengths, limitations, findings, and implications for our case study in particular as well as for the community dialogues methodology more broadly.

Conceptual Frameworks

This work is primarily based on two conceptual approaches: (1) the bioecological model of human development (Bronfenbrenner 2005) and (2) the bottom-up approach in health promotion program development (Laverack and Labonte 2000).

Bioecological Model of Human Development Bronfenbrenner's bioecological model of human development (Bronfenbrenner 2005) focuses on how an individual's development is influenced by both biological factors and environmental or ecological factors. The model emphasizes that human development and functioning result from one's interactions and experiences with the people, factors, and influences within the multiple ecological spaces in which they live and operate. These

ecological spaces overlap and are often nested within each other, with some being more proximal (e.g., the home and school), while others are more distal (e.g., the socioeconomic context).

Our work uses Bronfenbrenner's framework in examining the different community spaces in which children live and operate and in exploring how children perceive, interact with, and are affected by different aspects of those spaces.

Bottom-Up Approach It has been argued that the best approach to program development and effective interventions is the bottom-up approach (Laverack and Labonte 2000). Indeed, formal services traditionally offered by national child protection systems in LMICs have often not been widely utilized, particularly in rural and remote communities. One criticism of these systems is their tendency to be top-down, and thus not always accepted, owned, and used at the community level. Indeed, in community development, broadly, and in programming for children, in particular, it is considered good practice to hear the voices of communities and incorporate these perspectives in program design and delivery. A community-driven, bottom-up approach is more likely to enable nonformal collaboration and alignment, increase use of formal services, and drive internal social change as well as high levels of community ownership (Wessells 2015).

Our work takes a bottom-up approach in centering the voices of the community, particularly the voices of the primary beneficiaries of any child protection intervention – i.e., children themselves. Deliberate effort was made to include child-friendly participatory methodologies, to increase the likelihood of children being able to articulate their perspectives and contribute effectively to the dialogues. The perspectives and priorities identified by community members directly informed and shaped the development of child protection interventions in the communities.

Community-Based Organizations

Community-based organizations (CBOs) can be particularly effective in identifying child protection needs and developing protective environments for the children in their communities. Having been initiated and led by the community, they have deep insights into the needs, assets, and dynamics of their community. Moreover, CBOs operate within the multiple spaces where children spend time and coordinate with various stakeholders (Lentfer and Yachkaschi 2012), enabling them to be effective players in addressing the complexities of issues affecting child protection. Indeed, earlier research has confirmed that CBOs play vital roles in safeguarding children's rights and well-being (Daro and Dodge 2009; Munthali et al. 2014; United Nations Children's Fund [UNICEF] 2008).

While CBOs tend to be very rooted in their communities, it can sometimes be difficult for them to engage in ongoing dialogue, collaborative action, and reflection with a wide range of community members, particularly when trying to meet grant

timelines under limited budgets. In addition, CBO staff often lack the skills and resources to engage effectively in participatory processes such as facilitating inclusive dialogue, transcribing accurately, and analyzing rigorously, all while recognizing and trying to limit the influence of one's own bias in research process. Developmental scientists can play an important role in supporting CBOs to develop, refine, implement, and reflect upon participatory research methods to identify and address child protection and well-being needs.

Engagement and Dialogue with Community Members

One key element of a participatory approach to developing community programs is the process of dialogue with community members. This often involves trained facilitators working with community members to collectively identify local strengths and challenges and creatively brainstorm potential strategies for solving local problems by building on existing community-based structures (Campbell et al. 2013).

Community dialogues, particularly when using child-friendly methodologies and providing safe spaces in which children can speak, can effectively bring forward the voices of children and center them in the process of understanding the issues and developing solutions. This is consistent with the fourth principle of the UN Convention on the Rights of the Child (CRC; United Nations General Assembly 1989) which indicates that there is a need to respect the views of the child. This principle assumes that to know what is in the interest of the child, it is logical to listen to him or her.

Community Dialogues Methodologies The most commonly used methods to foster conversation with community members include focus group discussions and in-depth interviews with a variety of stakeholders such as village leaders, religious leaders, school leaders, social workers, healthcare providers, youth leaders and children. Other methodologies use tangible activities to foster discussion and assist participants to identify issues, processes, and assets. These include community mapping, timelines, body mapping, and H assessments, which will be further discussed in the methodology section of this chapter.

Community Dialogues for Child Protection Community engagement and dialogue have been widely used to address a range of child protection issues including reducing teenage pregnancy in Sierra Leone (Stark et al. 2014); reducing multiple concurrent partnerships in Lesotho (Phaswana-Mafuya et al. 2012); exploring the functioning of existing community-based child protection mechanisms in two districts in Aceh, Indonesia (Stark et al. 2012); and campaigning on the harmful effects of traditions abusing child rights and dignity in Tarime, Tanzania (Pesambili 2013).

While methodologies to engage community discussion have been used widely and in many different contexts, those cases that are discussed in the peer-reviewed academic literature tend to come mainly from high-income countries. However,

there are emerging reports from LMICs that these methodologies can play important roles in developing child protection interventions and systems that are responsive, impactful, and sustainable. For instance, in Sierra Leone, preliminary results indicated positive outcomes related to child protection, community processes, and system strengthening (Stark et al. 2014).

Community Dialogues for Child Protection in Shinyanga, Tanzania: A Case Study

Shinyanga context The Shinyanga region of Tanzania has some of the highest rates of poverty (multidimensional poverty index of up to 75%) and HIV (estimated adult prevalence of 6.5%) in the country (ESRF 2015). These factors have detrimental effects on family structure and stability, financial security, and opportunities for education, which in turn make children vulnerable by threatening their safety, well-being, and development (Subbarao and Coury 2004).

Indeed, according to the 2010 Demographic and Health Survey in Tanzania, more than 30% of children in Shinyanga did not attend school at any time during that school year (Terway et al. 2012), and a recent report by Uwezo found that only 30% of Shinyanga children aged 9–13 years passed basic literacy and mathematics tests (Uwezo Initiative -Tanzania 2013). As well, while Tanzania overall has a high prevalence of early marriage for girls (UNICEF 2011), Shinyanga has been reported to have one of the highest rates of child marriage in the country, with 59% of girls married before the age of 18 (Tanzania Media Women's Association 2017). These statistics exemplify the level of vulnerability and risk experienced by children in Shinyanga, making a compelling case for working with CBOs and communities to identify and address core child protection issues.

Objectives Given the unique and opportune positioning and grounding of CBOs in their communities, and the need for participatory community engagement in developing responsive, impactful, and sustainable programming, Firelight Foundation wanted to support its grantee-partner CBOs to regularly and meaningfully engage with their communities, to identify and address child protection needs in the Shinyanga region of Tanzania. Thus, in 2015, as they started developing programs, CBO partners were supported by Firelight to conduct initial community dialogues, fostering reflection and discussion among adults and children about the status of child protection well-being in their community and underlying factors that promote or compromise children's well-being in different community spaces and contexts. Community dialogues were conducted again in 2016 and 2017 to provide an opportunity for community members to continue dialogue, reflection, and action and to share feedback on progress on child protection matters in their community. This report focuses on the methodology and findings of the community dialogues held in Shinyanga in 2016.

Research Questions Firelight and CBO partners aimed to understand community perceptions of child well-being, identify facilitators and barriers to child protection and well-being, and identify perceived action points from community members. Specific research questions included:

1. What are the spaces in which children spend time daily?
2. What factors in each of these spaces, and in the community overall, support and harm children's health, safety, and well-being?
3. What factors specifically harm girls and children with disabilities?

Community Dialogues Methodology

Study Site and Participants

The community dialogues were carried out by four CBOs that are partnering with Firelight to improve child protection systems in Shinyanga. These CBOs have a broad set of aims, including empowering communities to challenge human rights violations, mobilizing communities to respond to children's needs, empowering children to advocate for their rights, and promoting sustainable economic development and the well-being of farming communities. The CBOs receive funding and support from Firelight to develop and implement a range of child protection interventions and to strengthen their own organizational capacity.

Each CBO conducted community dialogues in several of the villages in which they work. Participants included 150 primary school children (68 girls), 165 secondary school children (85 girls), and 273 adults (169 women), from 16 rural villages in Shinyanga.

Procedure

The community dialogues include multiple methodologies that can be chosen for use with different groups of participants. Separate activities and discussions are conducted with younger children (primary school aged), older children (secondary school aged), and adults. In our study, CBO facilitators tended to use community mapping and focus group discussions with adults, H assessments and discussions with secondary school children, and body mapping and discussions with primary school children. Table 10.1 details the methodologies used by facilitators during the community dialogues.

Prior to conducting the community dialogues, CBO facilitators were trained by a research consultant (the first author on this paper) with experience working with

Table 10.1 Community dialogue methodologies used by facilitators to engage adults and children from the community

Methodologies used with children	Methodologies used with adults
*H assessment (*Save the Children 2009**):** This methodology involves drawing a large H on a flip chart. In the middle, above the horizontal line, children name a space where they spend time. To the left of the left vertical line, children discuss and list factors that support their safety and well-being. To the right of the right vertical line, children discuss and list factors that harm their safety and well-being. In the middle, below the horizontal line, children discuss and list suggestions for improvement – ways in which that space could be improved to better support their safety and well-being	*Community mapping (*Amsden and van Wynsberghe 2005**):** Adults are asked to collaboratively develop a map of their community, specifically identifying the spaces in which children spend time. They discuss each of these spaces for how they support or harm children's safety and well-being
*Body mapping (*de Jager et al. 2016**):** The children make a "body map" by drawing around the shape of a child on large flipchart paper. A vertical line is drawn down the middle of the body map, so that one side represents a happy child: -), showing things that support them, and the other side represents a sad child: -(, showing things that don't support them. The children are encouraged to use the body map to talk about aspects of their communities that affect them	*Focus group discussions:* Adults are asked to discuss four or five main spaces in which children spend time. For each of these spaces, participants identify characteristics that make the space safe/healthy for children or unsafe/unhealthy for children. Facilitators probe for factors relating to the physical, social, and emotional environment in each space and ask about things/characteristics they would want to see for it to be an environment that supports children's safety and well-being[a]

[a]Note: While community members did engage in action planning during the community dialogues activity, the outcomes of that particular aspect of the process are not discussed in this chapter due to length limitations

children and communities in East Africa. The research consultant also observed initial data collection procedures and provided technical support to CBO facilitators. During the dialogues, facilitators took detailed notes in Kiswahili in provided templates, which they shared with the research consultant for analysis.

Analysis

The research consultant reviewed the qualitative notes and prepared them for analysis. NVIVO software (version 11) was used to assist in data management, coding, and thematic analysis in an iterative process. A research assistant's independent coding served to validate and refine the coding scheme and analysis framework. Analysis was framed by the research questions described above.

Ecological Realities of Children's Daily Life Spaces

The home and school were mentioned in every village and by each participating group as the most important spaces where children spend time. The playground, religious places, and water points were other important spaces for children. Other mentioned spaces included minefields, grazing areas, farms, and market places.

Factors in the Home Environment that Support and Harm Children's Well-Being

The home was considered to be the most important space for children and was identified as a salient space for children's well-being by all the participants. Table 10.2 presents the key supportive and harmful factors in the home environment described by primary and secondary school children and adults.

Overall, having basic needs met was most consistently noted as critical for children's well-being. In addition, participants highlighted the importance of optimal and nurturing parenting practices, the expression of love and affection, being involved in daily living activities, and having time for sports and leisure. In contrast, different forms of abuse and family conflict were consistently reported as home factors harmful for children's well-being. In addition, not having basic needs and rights fulfilled and excessive household work were described as harmful to children.

Some factors seemed to be raised by some of the groups and not others. For instance, primary school children in 14 communities identified parental domestic violence (fighting between parents) as detrimental to child's well-being; however, this was not mentioned by adults and secondary school children. Another example is the upholding of children's rights, which was mentioned by some groups of primary and secondary school children as important to child well-being, but not mentioned by adults.

Factors in the Home Specifically Harming Girls Secondary school children and adults were asked about factors in the home environment that are particularly harmful for girls. The most frequently mentioned source of harm for the girl child was being overworked. For example, a secondary school student noted that girls get harmed by "getting piled up with lots of housework." Similar sentiments were expressed by adults, who noted that girls were more likely than boys to be given responsibility for household chores: "girls lack the time to rest due to being assigned a lot of household chores." This contributed to other negative outcomes such as poor educational achievement since the girls did not get time to do their school work later in the day. The second most frequently noted source of harm for girls was early and or forced marriages. For example, one secondary school girl noted that "villagers or even family members tell you to leave school and get married." In a community mapping exercise, adults noted that girls are harmed by "negative cultural practices

Table 10.2 Factors in the home environment described as supportive or harmful to children's well-being

Factors mentioned by at least one stakeholder group in two or more communities[a]	Number of communities in which each stakeholder group mentioned this factor		
	Primary school children	Secondary school children	Adults
Factors in the home environment which support children's well-being			
Basic needs met	16	13	10
Optimal parenting practices such as monitoring child movements	10	12	0
Affection, love, and belonging	13	6	8
Being involved in daily living activities	11	6	5
Sports, games, and leisure	16	0	6
Having time for schoolwork	0	9	0
Opportunity to interact with others in a positive manner	5	4	0
Positive experiences	6	1	0
Upholding children's rights	3	2	0
Safety and security	0	3	0
Factors in the home environment which harm children's well-being			
Parental domestic violence	14	0	0
Basic needs/rights not fulfilled	12	1	4
Suboptimal parenting practices such as being very harsh, not monitoring child development	1	0	12
Verbal abuse	11	2	4
Physical abuse	10	0	5
Excessive household work	3	4	10
Family problems (e.g., ill health, orphan, conflict)	6	2	8
Negative experiences (e.g., being chased from home, negative influence from siblings)	11	5	0
Psychological problems	7	0	0
Limited time for socialization, leisure, rest	0	8	0
Discrimination	7	6	2
Drug and alcohol use	0	0	7
Sexual abuse, exposure to pornography, early sexual activity	2	1	2

[a]Note: The factors included in the first column are those mentioned by one or more stakeholder groups in two or more communities or villages. In the last three columns on the right are the number of communities in which a stakeholder group mentioned each factor

such as being forced to get married early." These examples were contextualized as part of broader gender inequity within the home environment.

Factors in the Home Specifically Harming Children with Disabilities Secondary school children and adults were asked about factors in the home environment that

are particularly harmful for children with disabilities. Home factors that were highlighted as particularly harmful to children with disabilities included the denial of basic needs, discrimination and stigmatization, and poor access to education. These factors seem to indicate dysfunctional interactions between children with disabilities and environments that are largely not supportive of and sometimes even abusive toward them.

Factors in the School Environment that Support and Harm Children's Well-Being

The school was identified as the second most important space for children and was highlighted as a salient space for children's well-being by both children and adults. Table 10.3 presents the key supportive and harmful factors in the school environment described by primary school children, secondary school children, and adults.

Overall, almost all the groups described different kinds of positive educational experiences as being important in supporting children's well-being at school. Positive educational experiences included the experiences of doing well in class, receiving good grades, and being rewarded for good performance. Opportunities to engage in games and sports were also reported as supporting children's well-being. In addition, expressions of love and affection, basic needs being met, and positive teacher-student relationships were all reported as supportive factors for children's well-being. In contrast, physical punishment was consistently highlighted as a significantly harmful factor for children's well-being at school. In addition, respondents reported negative educational experiences, inadequate resources and basic needs not being met, verbal abuse, and poor teaching practices as harmful factors in the school environment.

Factors in the School Specifically Harming Girls Secondary school children and adults were asked about factors in the school environment that are particularly harmful for girls. In almost all discussions, the most frequently identified harmful factor to girls at school was sexual harassment and exploitation by teachers. Participants noted male teachers would seduce and sometimes coerce the girls into having affairs and sexual relationships with them. Other forms of sexual abuse as well as early pregnancy were also identified as particularly harmful factors for girls. Additional reported harmful factors to girls included physical punishment, early and forced marriages, negative educational experiences, and other gender-based discrimination. These are demonstrated by the notes from a discussion with secondary school students in one community:

> Interviewer: "What can harm the girl child when they are in school?"
> Respondent 9: "A student being seduced by a teacher."
> Respondent 3: "A student being caned on her bottoms."

Table 10.3 Factors in the school environment identified as supportive or harmful to children's well-being

Factors mentioned by at least one stakeholder group in two or more communities[a]	Number of communities in which each stakeholder group mentioned this factor		
	Primary school children	Secondary school children	Adults
Factors in the school environment which support children's well-being			
Positive educational experiences (e.g., doing well in class, receiving good grades)	14	12	14
Sports, exercise, and leisure	9	9	12
Love, affection, and belonging	13	1	1
Basic needs met	10	4	6
Dedicated and nurturing teachers and positive teacher-student relationships	10	4	0
Availability of resources and facilities	0	2	5
Life skills	0	5	0
Upholding children's rights	0	5	0
Factors in the school environment which harm children's well-being			
Physical punishment	12	10	10
Negative education experiences	14	8	2
Inadequate resources and basic needs not being met	4	7	8
Verbal abuse	7	4	0
Poor teaching practices	0	6	8
Too much work	3	8	2
Negative peer influences	5	6	3
Sexual exploitation (early sexual debut, student-teacher affairs, and forced/early marriages)	9	6	2
Negative peer influence	5	6	3
Unhygienic environment and practices	2	1	4

[a]Note: The factors included in the first column are those mentioned by one or more stakeholder groups in two or more communities. In the last three columns on the right are the numbers of communities in which a stakeholder group mentioned each factor

A number of related factors were also named in different communities, such as lack of appropriate toilet facilities for girls and exposure to sexually transmitted infections.

Factors in the School Specifically Harming Children with Disabilities Secondary school children and adults were asked about factors in the school environment that are particularly harmful for children with disabilities. These included discrimination, stigmatization, bullying, and maltreatment by peers. Other frequently identified harmful factors in the school setting for children with disabilities included the lack of adequate and appropriate infrastructure, physical punishment and abuse, and not being loved. Again, these three factors seem to reflect dysfunctional interactions

between children with disabilities and environments that are not supportive and often harmful toward them.

Factors in the Playground Environment that Support and Harm Children's Well-Being

The playground was mentioned as an important space for children by community members, particularly by primary school children, in different communities. Table 10.4 presents the key supportive and harmful factors at playgrounds described by stakeholders in multiple communities.

When describing supportive factors at playgrounds, respondents highlighted the value of children's involvement in games, sports, and leisure activities. Other supportive factors at playgrounds included positive social interactions, health promotion, and the development and nurturing of skills. In contrast, participants – particularly secondary school children and adults – indicated that violence and antisocial behavior were harmful to children at playgrounds. Other harmful factors included the risk of injuries, the lack of essential facilities, negative peer influences, drugs and other substance abuse, and early sexual activity. The lack of facilities, drug and substance abuse, and early sexual activity were emphasized by adults but hardly mentioned by primary and secondary school children.

Factors at the Playground Specifically Harming Girls Secondary school children and adults were asked about factors in the playground environment that are particularly harmful for girls. Many of the factors listed above – such as negative peer influences and lack of adequate facilities – were highlighted as being particularly harmful to girls. Gender-based discrimination was also highlighted, such as girls not being allowed to take part in sports.

Other important harmful factors included physical abuse (e.g., being beaten) and sexual abuse (e.g., being assaulted in the dark). These factors were voiced by both secondary school children and adults in the different villages. For example, in one community, the following conversation with secondary school children was noted:

> Interviewer: "What are some harmful factors that girls face at the playground?"
> Respondent 1: "Being raped."
> Respondent 4: "Having sex when it gets dark."
> Respondent 6: "Being seduced."

Factors at the Playground Specifically Harming Children with Disabilities Secondary school children and adults were asked about factors in the playground environment that are particularly harmful for children with disabilities. The most consistently mentioned harmful factors were discrimination and negative experiences such as being ridiculed by peers. Other factors included fights and violence which made them particularly vulnerable to injuries.

Table 10.4 Factors in the playground environment identified as supportive or harmful to children's well-being

Factors mentioned by at least one stakeholder group in two or more communities[a]	Number of communities in which each stakeholder group mentioned this factor		
	Primary school children	Secondary school children	Adults
Factors at playgrounds which support children's well-being			
Involvement in games and leisure activities	13	9	10
Positive interpersonal interactions and relationships	2	6	6
Health promotion	0	9	5
Positive experiences	5	4	0
Acquire skills, nurture talents	0	2	5
Factors at playgrounds which harm children's well-being			
Violence and antisocial behavior	0	6	7
Injuries	7	4	4
Lack of essential facilities	0	0	8
Negative peer influences	0	2	0
Drugs and substance abuse	0	1	5
Early sexual debut	0	0	4
Physical abuse	2	0	0

[a]Note: The factors included in the list in the leftmost column are those mentioned by one or more stakeholder groups in two or more communities. In the remaining three columns are the numbers of communities in which a stakeholder group mentioned each factor

Effective Use of Community Dialogues as a Strategy for Sustainable Child Protection

Through the community dialogues process, the organizations working in these Shinyanga communities set out to learn community members' perspectives on children's well-being in a context in which they face a myriad of risk factors and vulnerabilities.

In this section, we review strengths and limitations of our work, discuss the overall findings, consider implications of the findings, and conclude with a review of the community dialogues process as a strategy for child protection.

Strengths and Limitations

This study was based on a particular geographic, socioeconomic, and cultural context. In addition, CBO facilitators, although trained and supported in the process of data collection, were nevertheless not skilled researchers. Their subjective perspectives may have influenced the methods they used, the discussions they facilitated,

and the points they documented. Thus, we are cautious in generalizing the findings. However, it is important to note that many of our findings are consistent with previous research in similar settings, suggesting that there is a great degree of validity in these research methodologies, despite their limitations.

This work involved an important dialogue process between CBOs and community members and among community members themselves, with feedback also being shared and incorporated into the strategy and plans of the funding agency. Children of different ages participated in this study and were empowered to express themselves through the use of safe spaces and child-friendly methodologies.

Indeed, a key strength of the community dialogues is that community facilitators were provided with a "menu" set of measures from which they could choose those strategies that would work for their needs and in line with the characteristics of the participants. This maximized the comfort and participation of both community facilitators and participants. However, it also introduced a bias in which certain methodologies elicited more or less information or discussion (e.g., the body mapping and community mapping methodologies seemed to produce the most information), or slightly different types of feedback, from participants – thus skewing the data that came back from a particular community or group of participants. For this and for other reasons, we were careful to not engage in any comparative analysis between communities.

Discussion of Findings

Spaces Where Children Spend Time The most commonly identified and emphasized spaces were the home, the school, and the playground. This finding is consistent with the day-to-day realities of many children, in many communities, all over the world. While this finding may seem obvious, we feel it important to state nonetheless, as we endeavored to enter the dialogue process with an open mind and not make any assumptions about which spaces are most salient in children's lives in a particular community.

Some of the other spaces identified as places where children spend time are indicative of their day-to-day experiences living in poverty. For example, children described spending time at water points, minefields, grazing areas, farms, and market places, as part of their contribution to daily living and/or economic activities for their family. Poverty and its co-occurring risk factors remain one of the most salient threats to child well-being in resource poor settings such as Shinyanga. This study's findings are consistent with earlier studies, indicating that household and community poverty negatively impacts child development (Kostelny et al. 2013) and increases children's vulnerability to other harms (Meinck et al. 2015). For instance, the lack of safe and clean water in the community is in itself harmful to children's health and well-being and also drives children to the well late in the evening which in turn may increase their risk of being sexually or physically abused.

Factors that Support Children's Well-Being Across different spaces, the key factors identified as protective to child well-being could be categorized into four major domains: (a) economic, e.g., access to basic needs, adequate resources, and facilities; (b) positive socio-emotional climate; (c) sense of belonging, receiving affection, and having supportive and nurturing adults; and (d) activities for physical exercise and relaxation.

This categorization of the needs of the child is a good fit with internationally accepted and recommended protective factors for child well-being. For instance, recent recommendations on integrated interventions indicate the need for both economic empowerment and social protection such as cash transfer programs combined with positive socio-emotional environment or what has been referred to as nurturing care (Britto et al. 2017). Moreover, most of the identified child protection needs mirror what has been targeted in the various SDGs.

Factors that Harm Children's Well-Being Across different spaces, similar factors were identified as harmful to children's safety and well-being. For example, sexual, physical, and verbal abuse was noted as harmful to children at home, school, and other community areas. This underscores the need for child abuse prevention and intervention strategies to target the multiple settings and people with whom children interact on a daily basis.

The factors identified in this study as harmful to children were consistent with what has been previously reported elsewhere in other LMICs. For instance, an ethnographic study from Kilifi, Kenya, surfaced similar issues, such as early pregnancies, sexual abuse, and corporal punishment (Kostelny et al. 2014).

Factors Harming Girls Girls in these communities seemed to experience harm from two key things: gender-based discrimination and sexual exploitation. Gender-based discrimination (treating girls in a disadvantageous way compared to boys) manifests itself in many ways, but one key way it emerged in our findings was in girls being assigned more responsibility than boys for household chores. In many African contexts, participating in developmentally appropriate tasks within the home environment is considered beneficial for child development and socialization (Mbale et al. 2017). However, when household work is excessive and inequitably distributed, it may potentially harm girls, particularly by reducing the amount of time they have available for school work.

Sexual exploitation of girls was described as widespread in these communities, and it came in many forms, including sexual abuse, transactional sex, early marriage, sexual harassment, and early sexual debut. This sexual exploitation seemed often to be initiated by people in positions of "trust," in spaces that are intended to be safe. For example, in school, teachers are supposed to promote school well-being and a learning environment without harassment (Løhre et al. 2010). However, in our study, the sexual relationships between girls and teachers were seen to be the most important barrier to the well-being of girls in the school context. These results are consistent with results from other parts of Africa. For instance, a study from South

Africa noted that in their setting, "the greatest concern is the teachers' abuse of their power over the school girls to gain sexual access to them. The teachers' conspiracy to support each other is an indication of its pervasiveness. These experiences diminish the educational chances of girls. Failure to address this problem conveys the message to teachers and male students that their behaviour is condoned" (Abrahams et al. 2006, p. 754). There is a need to prioritize and address these concerns. Failure to do so will hinder the achievement of SDG 5, which aims at ensuring gender equality and empowerment of all women and girls.

Factors Harming Children with Disabilities For children living with disabilities, discrimination and stigmatization stood out as the most harmful issues they experience on a day-to-day basis in the different spaces where they spend time. The reality that children living with disabilities cannot access important facilities within their settings requires an urgent response. The United Nations Convention on the Rights of Persons with Disabilities advocates for universal design of products, environments, programs, and services to the extent that they are usable by all people (WHO, 2001). In our study, the playground was noted to be especially unfriendly for those with disabilities. The lack of access to important community spaces such as playgrounds indicates that children with disabilities miss opportunities to fully participate in sports and other activities. This situation further contributes to their segregation and exclusion.

Implications and Recommendations

Based on these findings, we offer five broad recommendations for consideration in the development of programs for child protection in Shinyanga.

First, while many other ecological contexts are important for child well-being, the home and school remain the two most important contexts. This is in line with ecological models that indicate that proximal settings (e.g., factors within the home and school environment) are likely to be more impactful than distal factors. Priority should be given to strategies focusing on making the school environment safe, strengthening parenting, and improving household environments. Critically, poverty and lack of access to basic needs remain an important barrier to child well-being. Economic empowerment programs need to be integrated as part of child protection strategies. These recommendations align well with several of the SDG targets, e.g., Targets 4.1 which aims to build and upgrade education facilities that are child, disability, and gender sensitive and provide safe, nonviolent, inclusive, and effective learning environments for all.

Second, the central role of a positive socio-emotional climate needs to be reemphasized as a key target of child well-being strategies. Community members, families, and the school community need to be made more aware of how they can meet these needs, which generally require no extra resources. Developing programs based on some of the basic principles of nurturing care (Britto et al. 2017) can contribute to positive childhood outcomes in this context.

Third, sports and leisure activities play a prominent role for children in these settings. In both the international development discourse and in the development science literature, these activities often do not get the same attention as education or healthcare, and yet physical activity and leisure are important contributors to multiple dimensions of child health, development, and well-being. Programs which foster opportunities for children to engage in sports and leisure activities should be an integral part of strategies to improve child well-being.

Fourth, awareness-raising, education, and normative change are urgently needed around sexual and reproductive health matters, given the reality that early sexual activity and unwanted pregnancies were identified as key factors harming girls.

Fifth, there is a need for community dialogue and processes to make community spaces accessible and welcoming to children with different abilities, so as not to impede their participation in the community.

Community Dialogues as a Strategy for Research and Program Development

In this chapter, we have shared our experience using community dialogues in Shinyanga, Tanzania, to gather community perspectives and inform program development. We have found the process to be meaningful, informative, and generative in many ways.

Issues relating to child protection (e.g., sexual abuse) are often sensitive and difficult to discuss. The range of methodologies available in the community dialogue approach allows facilitators to select methods that will work well in particular settings and with particular participants. Moreover, the tangible activities (e.g., community mapping or body mapping) facilitate discussion of more sensitive topics. Indeed, we found that both adults and children became more open and willing to share freely over the course of the discussions.

Overall, we see community dialogues as a critical part of developing community-based child protection strategies for four key reasons:

1. Community dialogues can generate deep and grounded knowledge about the ways children are harmed and protected within their daily living, working, studying, and playing spaces.
2. Community dialogues can advise CBOs and other local leaders and institutions of the priorities within their communities and particularly the needs and priorities of their children.
3. Community dialogues can raise awareness among community members of the different ways in which children may be harmed and supported in different settings.
4. Community dialogues can build community ownership and participation in collaboratively developed child protection strategies.

To conclude, based on our experiences in Shinyanga, we recommend community dialogues as an effective approach through which developmental scientists and local community partners can collaborate to gather community perspectives, including the perspectives of children, to inform and guide the development of community-based child protection strategies.

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Chapter 11
Developmental Approach to Work Readiness for Youth: Focus on Transferable Skills

Nikhit D'Sa, Peter C. Scales, and Eliel T. Gebru

The Sustainable Development Goals (SDGs) put forth an ambitious approach to decent work, a term that refers to "productive work in which rights are protected, which generates an adequate income, with adequate social protection" (ILO 2015, p. 61). While targets around decent work can be found throughout the 17 SDGs (ILO 2017), the clearest articulation is in Goal 8: promote inclusive and sustainable economic growth, employment, and decent work for all. In order to reach this goal, we will have to add between 30 and 40 million new, decent jobs to the global labor market every year, until 2030 (ILO 2017; United Nations 2016). One of the reasons for this addition to the labor market is that today's youth will be joining the labor force within the next decade.

To meet this demand, the SDGs have identified targets that increase technical training for youth, especially in information and communications technology (ICT). But evidence from low- and middle-income countries (LMICs) highlights the fact that technical training for youth needs to be accompanied by training around non-technical—transferable—skills as well (Adams 2007; Brown et al. 2015; Butler et al. 2012). We start this chapter by providing an argument for why we need to focus on nontechnical—transferable—skills development for youth in LMICs. We then use a developmental sciences lens to articulate the need to focus on a more holistic picture of transferable skills. Given the SDG focus on indicators, we end this chapter with a case study describing one way in which we can measure transferable skills in LMICs and the challenges that we face in trying to use cross-country measures.

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Youth Work Readiness and the SDGs

The current generation of about 1.8 billion youth (10–24 years) is the largest cohort of young people in our history, and 9 out of 10 live in LMICs (Gupta et al. 2014). This youth bulge is especially evident in sub-Saharan Africa, one of the few regions in the world where the youth proportion of the population will continue to grow for the next decade (Mcginn et al. 2015). The ten youngest nations by population age are on the African continent; the median age in five of these countries—Niger, Uganda, Mali, Malawi, and Zambia—is under 16 years, with approximately 60% of the population under the age of 25 (Mcginn et al. 2015). These statistics are particularly significant in light of research that has demonstrated that investing in youth is positively associated with a country's gross domestic product (Jimenez and Murthi 2006; Knowles and Behrman 2005; UNFPA 2010).

But harnessing this demographic dividend has proved difficult. Young people (12–25 years) in LMICs make up one-fourth of the working-age population but nearly half of the unemployed (ILO 2012, 2016). Although youth in LMICs are staying in school for longer and more are entering higher education (ILO 2015), they often enter the formal labor market underprepared (Global Partnership for Youth Employment 2014; Palmer 2007). Two prominent concerns that employers note are as follows: (a) youth lack the technical skills that are important for entry-level positions (UNESCO 2012), and (b) youth are unaware of what is expected of them in formal employment (J-PAL 2013). Moreover in many rural areas in LMICs, youth are unable to access the formal labor market; these youth are more likely to benefit from apprenticeship and entrepreneurship skills that bolster self-employment, skills that are not often taught in formal education (Awogbenle and Iwuamadi 2010; Owualah 1999).

This focus on work readiness skills is part of two interrelated SDGs—Goal 4 and Goal 8 (United Nations 2015). Target 4.4 (Goal 4) aims to increase the number of youth with relevant skills, including technical and vocational skills, for employment, decent jobs, and entrepreneurship. Target 8.6 (Goal 8) aims to substantially reduce the proportion of youth not in employment, education, or training by 2020. However, the indicator for Target 4.4—proportion of youth and adults with information and communications technology (ICT) skills—does not reflect the range of skills needed for youth in LMICs to be ready for decent work. Assuring that youth have ICT skills will not necessarily address the concern of employers that youth do not have the technical and work readiness skills that they need for employment in the formal and informal labor market. Additionally, simply assuring that youth are in employment training—the indicator for Target 8.6—does not ensure that they are learning the necessary skills needed for the labor market.

Over the last few decades, governmental and nongovernmental organizations in LMICs have implemented youth work readiness programs that address either building youth skills, improving demand for youth labor, or a mix (James-Wilson 2008). But the evidence on the success of these programs is mixed. A recent United States Agency for International Development (USAID) review (2013) demonstrated that

work readiness programs can increase employment opportunities for youth as well as boost short-term earnings, especially in LMICs. However, another systematic review (Kluve et al. 2016) demonstrated that youth work readiness programs have had limited success; only 30% of these programs have had a demonstrated success on labor market outcomes. The discrepancy between these reviews can partly be explained by the fact that livelihood development programs for youth in LMICs are successful under specific situations: (a) target youth who have had limited access to employment services (Kluve et al. 2016; USAID 2013), and (b) intervene on a broad array of skill development in youth, not only technical (vocation-specific) skills (Adams 2007; Butler et al. 2012). Thus, in order to better address Targets 4.4 and 8.6, we need to be more focused on the nontechnical skills that youth, especially youth with limited access to formal employment services in LMICs, need to be learning and leveraging for decent work.

Developmental Approach to Transferable Skills

One area of nontechnical skills that has received increasing attention in youth work readiness programming is transferable skills: "higher-order cognitive and non-cognitive skills that individuals can use to be successful in different situations in work and in life" (Brown et al. 2015, p. 1). These skills are important across domains of a youth's life and can be transferred or used in a variety of domains (Pellegrino and Hilton 2012). For example, social competencies learned in the family and educational setting are applicable and beneficial in work settings as well. Importantly, these skills are malleable and change over a time; they can be taught and learned (Brown et al. 2015).

The definition of transferable skills is very broad, but there is a literature that helps narrow our focus. For example, a recent USAID review (Lippman, et al. 2015) refers to these skills as "soft skills" but notes that they are referencing skills that are "transferable across sectors and across jobs" (p. 16). Five types of transferable skills were identified in that report: social skills (e.g., respecting others), self-control (e.g., emotion management), positive self-concept (e.g., self-efficacy), higher-order thinking skills (e.g., problem-solving), and communication skills (e.g. listening skills).

The evidence on the relationship between these transferable skills and labor market outcomes, especially for youth in LMICs, is strong and positive (Olenik et al. 2013a). Transferable skills, as well as skills such as conscientiousness, perseverance, sociability, and curiosity, are more predictive of labor market success than IQ (Heckman et al. 2006; Kautz et al. 2014). Work readiness programs that include these transferable skills in a systematic and deliberate manner have demonstrated positive effects on employment opportunities for youth, levels of income among youth in entry-level positions, the level of promotion, and employer satisfaction (Brown et al. 2015; Ibarraran et al. 2012; Lippman et al. 2015; Olenik et al. 2013a, b).

But this evidence comes with two caveats. First, there are transferable skills that do not fit current typologies; given the vastness of the transferable skills universe, it

is likely that there are sets of skills whose effects are not studied widely. This can result in an evidentiary blind spot. For example, there are additional skills—hard work, dependability, and responsibility—for which we have considerable substantive evidence, especially from employer reviews, but for which we do not yet have strong empirical evidence (Lippman et al. 2015). The second caveat is that we have a limited understanding of how the ecological context—family support, community institutions, and gendered nature of certain jobs—affects how youth use their transferable skills (Lippman et al. 2015; Nagaoka et al. 2014). When trying to address these two caveats, we can turn to developmental science; the focus on transferable skills for youth livelihood development can draw on three interrelated strands of theory from developmental psychology: ecological systems theory, developmental cascades, and asset-based skill development. We discuss each below.

First, drawing on ecological systems theory from developmental science (Bronfenbrenner 1977; Bronfenbrenner and Morris 1988), researchers, practitioners, and policymakers have started focusing on the settings that support youth develop positively, enabling them to experience and navigate decent work. This research encompasses attention to young people not only acquiring transferable skills but also strengthening the *contexts* in which young people develop, particularly the quality of *relationships* young people experience in their families, schools, communities, and peer groups (Benson et al. 2012; D'Sa et al. 2017). From this developmental perspective, workforce readiness is not simply a matter of preparing the individual with skills but in also shaping environments to promote broad well-being that supports the acquisition and/or development of particular skills relevant for work success.

Second, in high-income countries, and increasingly in LMICs, the conversation about youth workforce readiness has moved toward a life-course perspective, focusing on outcomes that go beyond income generation to include family and social well-being, and civic engagement (Butler et al. 2012; Johnson et al. 2011; UNICEF 2011). This draws on the theory of developmental cascades: "Developmental cascades refer to the cumulative consequences for development of the many interactions and transactions occurring in developing systems that result in spreading effects across levels, among domains at the same level, and across different systems or generations" (Masten and Cicchetti 2010, p. 491). This suggests that development in one domain (e.g., social and emotional) affects and is affected by development in a different domain (e.g., cognitive); additionally, development in one domain can support development in a subsequent domain later in life. Thus, in supporting youth develop the skills for decent work; more programs have started addressing the cross-domain nature of skills.

Third, transferable skills explicitly leverage youth strengths rather than only focusing on deficits holding youth back. From a human development perspective, this draws on the framework of positive youth development (PYD). PYD developed as a response by practitioners who believed that only addressing deficits ignored the developmental strengths that individuals possessed; they wanted to "focus on young people's strengths, skills, and possibilities" (Benson et al. 2006a, b, p. 1). PYD is not intended to replace a problem-reduction approach but rather to supplement it

and provide a broader, more universal strength-building perspective in which specific prevention and problem-reduction actions can become even more effective for those needing them. A PYD approach assumes that all youth, not just those considered "at risk," are inherently capable of positive growth and development and should be part of programming (Benson et al. 2006a, b). More importantly, youth are considered resources to be tapped for advancing their own positive development, not simply passive receivers of prevention programs or policies.

Ecological systems theory, developmental cascades, and PYD are beginning to be reflected in the current discourse on skill-building in youth work readiness programming. For example, USAID (2012) reflected this broader perspective on youth development when it recognized in a new policy on youth development the key role that external (environmental, social, relational) and internal (personal, individual) assets, across developmental domains, play in helping young people succeed within their cultural contexts. Similarly, the Department for International Development (DFID 2016) recently produced a policy document that highlights the critical importance of youth participation, asset building, and contextual programming.

In order for us to meet Target 4.4 and 8.6 of the SDGs, this move in policy related to youth programming needs to be met by indicators and measurement tools, which embrace the ecological, contextual, and asset-focused nature of work readiness programming. In the latter half of this chapter, we provide a case study for measuring transferable skills in a youth livelihood development program in continental Africa, an example that highlights the human development theories outlined above.

Measuring Transferable Skills: Developmental Assets in Youth in Action

Started in 2012, Youth in Action (YiA) is a 6-year program that aims to improve the socioeconomic status of 40,000 rural out-of-school girls and boys between the ages of 12 and 18 in Burkina Faso, Egypt, Ethiopia, Malawi, and Uganda. The program does this by supporting youth find safe and viable livelihoods in the agricultural value chain. Youth participate in the program for an average of 7 months. For the first 4 months, youth are arranged into groups of mixed literacy levels to work on literacy, numeracy, financial literacy, business planning, and transferable skills. Once they complete the learning cycle, youth enter the action phase. During this phase, youth build on their existing livelihood skills by starting their own business, taking up an apprenticeship, attending a technical training program, or finding gainful employment in their community. A few youth also choose to return to school.

Transferable skills in YiA are defined by the Developmental Assets framework (Scales and Leffert 2004). Grounded in a PYD approach, the Developmental Assets framework focuses on developmental vitamins: positive experiences and qualities identified as being essential to healthy psychological and social development in childhood and adolescence (Benson et al. 2006a, b; Scales 1999). In other words,

the Developmental Assets framework explicitly addresses the strengths that youth possess or the ones they need to build, in order to be successful in the labor market. For example, in an impact evaluation of an education and livelihood program for rural Bangladeshi girls (Scales et al. 2013), the evaluators chose to use the Developmental Assets framework as a way to frame the key developmental strengths that the program could help build. The evaluators found that the *Kishoree Kontha* program markedly increased the interpersonal and intrapersonal strengths of the girls in the treatment group.

The Developmental Assets framework also recognizes the ecological systems within which youth develop their livelihoods, addressing both internal strengths and opportunities and guidance from family, school, peers, and community (Scales et al. 2016a, b). For example, designed with the Developmental Assets framework, *Kishoree Kontha* coupled academic and work readiness training with family and community activities: "the benefits of positive relationships between adults and adolescent girls were stressed. Project girls also developed family disaster risk-reduction plans with their parents and were encouraged to organize and to facilitate community-level events" (Scales et al. 2013, p. 173). The researchers found that the biggest gain that intervention youth made was in these external assets; the intervention girls felt that they were more supported by their parents and community and that they had a more defined sense of what was expected of them.

Lastly, the Developmental Assets framework focuses on competencies across multiple domains: youth's understanding of his/her own strengths (internal assets) as well as the supports that he/she has in the different settings around him/her (external assets) in eight different categories—support, empowerment, boundaries and expectations, constructive use of time, commitment to learning, positive values, social skills, and positive identity. In a USAID study in Jordan, Rwanda, Bangladesh, and Honduras, these internal and external assets were positively and strongly associated with youth work readiness (Scales et al. 2012). Building on that research is a growing database of more than 32,000 youth aged 9–31 years in more than 30 countries in which the level of young people's assets has been found to be linked to several dozen other measures of positive youth development, including engaging in safe and productive employment, level of educational attainment, sexual and reproductive health, civic engagement, and interpersonal problem-solving skills, all variables related to work readiness (Scales et al. 2016a, b).

YiA uses the Developmental Assets framework as a programming component, addressing each of the asset categories during the learning phase. These competencies are measured using the Developmental Assets Profile (DAP), a 58-item survey that provides a breakdown of youth scores across eight internal and external asset categories, description of youth perception of support in the contexts/settings surrounding them, and an overall DAP score. In Table 11.1 we present examples of items that measure each of the subscales in the DAP.

Using the DAP in YiA has been a challenging and educative experience. There are three specific lessons that can help us better understand how to measure youth transferable skills for the SDGs: adapting a transferable skills tool, accounting for social desirability bias, and interpreting scores appropriately.

Table 11.1 Developmental Asset framework categories, sample items, and mapping to a soft skills typology

DAP category		Sample items	Mapping to "soft skills" typology (Lippman et al. 2015)
External asset categories	Support	I seek advice from my parents; I have a family that gives me love and support	Communication skills Social skills
	Empowerment	I feel valued and appreciated by others; I am given useful roles and responsibilities	Positive self-concept
	Boundaries and expectations	I have adults who are good role models for me; I have a family that knows where I am and what I am doing	Communication skills
	Constructive use of time	I am involved in creative things such as music, theater, or art; I am spending quality time at home with my parents	
Internal asset categories	Commitment to learning	I enjoy reading or being read to; I have teachers who urge me to develop and achieve	
	Positive values	I am developing respect for other people; I tell the truth even when it is not easy	Social skills
	Social competencies	I am sensitive to the needs and feelings of others; I plan ahead and make good choices	Social skills
	Positive identity	I feel in control of my life and future; I am developing a sense of purpose in my life	Positive self-concept
	Answered on 4-point Likert-type scale: Not At All or Rarely, Somewhat or Sometimes, Very or Often, Extremely or Almost Always		

Adapting DAP for Cross-Cultural Use

While there is some coalescence around the definition and operationalization of transferable skills (Lippman et al. 2015; Pellegrino and Hilton 2012), the nuances of the competencies being measured can vary in different national and regional contexts. The DAP was originally designed for use in the United States; using it across the five YiA country contexts and varying samples posed notable cultural, idiomatic, and linguistic challenges. Items like "I stand up for what I believe in" were difficult to translate because the expression "stand up for" is an English idiom. In addition, the focus on the young person defending their own ideas, beliefs, and convictions reflected an importance of the individual, which was not always applicable in YiA contexts. For example, in the DAP item "I feel in control of my life and future," the phrase "control over one's life" was perceived as too egocentric, especially in communities with more collectivist traditions. There were also conceptual

Table 11.2 Steps in translating, adapting, and contextualizing the Developmental Assets Profile for Youth in Action

Step	Description
Qualitative groundwork	Cognitive testing of the tool to understand how youth and parents understood each item
Translation	DAP survey translated from English to the language of instruction (LoI) in each country
Back translation	Back translating the program language survey into English, by a separate bilingual translator, to understand item interpretation
Pilot test	Assess psychometric rigor of DAP categories and total score using a sample of ~150 youth
Field test-retest	Assess the test-retest stability of DAP categories and total score using a sample of ~200 youth who take the survey twice, 2 weeks apart

differences in languages. For example, "I care about school" was difficult to translate into contexts where it was unusual to express emotional care toward a building or environment.

Foreseeing these cultural, idiomatic, and linguistic challenges, we embarked on a rigorous process of translating, adapting, and contextualizing. We describe the steps of this iterative process in Table 11.2.

The process took between 5 and 9 months in each country and necessitated significant discussion and debate between local field staff and researchers, going back and forth tweaking words and clarifying language in order to make the tool contextually appropriate to each of the YiA contexts.

Account for Social Desirability Bias

In a review of the methodological biases in behavioral research, Podsakoff et al. (2003) highlighted the importance of understanding and accounting for social desirability bias when asking participants about behaviors, skills, and perceptions. This bias is the "tendency of some people to respond to items more as a result of their social acceptability than their true feelings" (p. 882). This is especially an issue in work readiness programs in LMICs where youth may perceive their status in the intervention, and continued investment in their communities, as linked to the responses they give on a survey. Youth who think that reporting stronger transferable skills makes them look better to the interviewer may be biased to present themselves as more skilled than they are. Social desirability bias does give us an indication of the relative importance of certain skills or behaviors in a community; respondents are unlikely to display this bias unless the skills or behaviors are valued in their community, highlighting the fact that researchers could be measuring something valued and important (Fisher and Katz 2000). However, if this error happens randomly in the sample, then it is hard to uncover the true profile of the average youth's skills or the relationship between these skills and labor market outcomes.

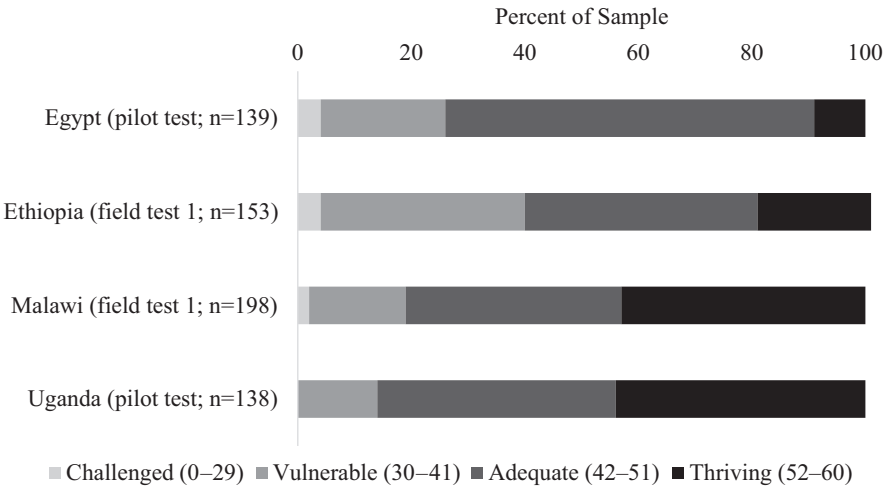

Fig. 11.1 Percent of sample reporting different levels of the DAP score
Note: The four DAP levels are used to communicate DAP scores (in parentheses). These levels have been shown to consistently predict well-being outcomes among youth across diverse contexts (Scales et al. 2016a, b)

This is a pertinent issue when measuring transferable skills and one that we faced when using the DAP in four of the five YiA countries. Data from either the pilot test or the first field test in Egypt, Ethiopia, Malawi, and Uganda resulted in a marked positive skew in the total DAP score. We provide an illustration of this positive skew in Fig. 11.1.

Between 61% and 86% of the youth in the four samples reported having a level of assets that we would define as being adequate or thriving. This positive skew was especially evident in Malawi and Uganda where 43% and 44% (respectively) of the youth in the sample reported having a thriving level of assets.

This positive skew was surprising for the local field teams. Having worked in YiA communities before, field officers were expecting youth to report fairly low levels of transferable skills. The average YiA community is located in especially rural areas where youth have limited exposure to formal services. Discussions with field officers raised the issue of social desirability bias, especially since the survey was administered individually through face-to-face interviews. In some YiA communities, it is culturally impolite to criticize family, school, or community. To deal with this bias, we revised items with a positive skew to make them clearer for youth. We also added games at the start of the assessment where we explained the Likert-style response items to youth. Lastly, we trained assessors to build rapport with youth before the assessment and to reemphasize the purpose of the assessment, the acceptability of giving honest answers, and protections for youths' confidentiality.

Table 11.3 Internal consistency reliabilities for the DAP categories and total score from the final field test in each YiA country

Country	Burkina Faso	Egypt	Ethiopia	Malawi	Uganda
Survey language	Dioula	Arabic	Amharic	Chichewa	Lhukonzo
Sample size (n)	130	156	119	198	135
Total DAP score	.94	.88	.94	.93	.95
External assets	.90	.79	.87	.89	.91
Support	.63	.61	.71	.69	.78
Empowerment	.66	.61	.51	.70	.68
Boundaries and expectations	.84	.69	.75	.79	.82
Constructive use of time	.66	.06	.56	.58	.70
Internal assets	.90	.83	.90	.86	.93
Commitment to learning	.67	.73	.76	.68	.80
Positive values	.79	.67	.77	.68	.83
Social competencies	.63	.48	.74	.64	.77
Positive identity	.67	.55	.79	.62	.69
Personal context	.75	.69	.78	.72	.79
Social context	.78	.63	.82	.74	.86
Family context	.78	.74	.85	.76	.85
School/learning context	.81	.77	.92	.85	.85
Community context	.85	.65	.77	.78	.86

Note: In our interpretation, we use the following benchmarks by which to assess an internal consistency reliability coefficient: .70 or higher = acceptable; .60–.69 = promising;<.60 = unacceptable

Interpret Scores at Appropriate Level

Even after the rigorous adaptation process, we have to interpret DAP scores cautiously. The linguistic and idiomatic discrepancies were evident in the internal consistency reliability of the different subscales. Table 11.3 summarizes the internal consistency reliabilities—a measure of how well the items measure each scale and subscale—from the final field tests.

The Constructive Use of Time subscale was not acceptably reliable in three of five final field tests, nor was it in the promising range. Additionally, the empowerment subscale in Ethiopia's final field test and the social competencies and positive identity subscales in Egypt final field test all proved to have low internal consistency reliabilities. However, the total DAP score and the scores for the two scales—internal and external assets—were acceptably reliable in the final field tests in all five YiA countries. Because of this, we restricted all our analysis[1] and interpretation to the total DAP score and the score for youth on the internal and external asset scales.

[1] Findings from the pre-posttest study in YiA using the DAP will be shared in an upcoming publication<?spiepr Par35?>

Additionally, we ran tests of measurement invariance for the DAP across three YiA contexts (Egypt, Ethiopia, and Uganda), using each country's final field test data. The aim of this test was to explore whether we were measuring the same underlying DAP categories and scales in the three contexts. In other words, were youth interpreting the DAP in the same way across national, cultural, and linguistic contexts? Our test showed that the DAP did not have cross-country measurement invariance, which was not surprising: during the adaptation process, even though we attempted to maintain as much commonality as possible, we erred on the side of the wording having face validity in the different contexts. In terms of interpretation, not being able to establish measurement invariance across the three YiA context means that our interpretation of the transferable skills for youth needs to be country-specific. Cross-country mean comparisons using the DAP data to compare changes in transferable skills for YiA youth, and the effect of these changes on youth labor market outcomes, across the YiA countries, may not be meaningful.

Conclusion

As we move forward with meeting the promise of the SDGs, we need to focus more strategically on the skills that youth already possess for livelihood development and the skills that they can learn in order to leverage decent work. This means that Targets 4.4 and 8.6 need to move from merely understanding access to training and employment to a fuller understanding of the technical and nontechnical skills that youth are building. While this may be a heavy lift at the global level, it is not beyond programs and even governments; they should highlight this skill development and measure what programs are improving these skills, under what conditions, and for whom.

The DAP is one example of a measure that can be used to understand the transferable skills of youth in livelihood development projects. There are several assessments in the extant literature that can be used to measure transferable skills (e.g., Olenik et al. 2013b; Wilson-Ahlstrom et al. 2014). The key is for us to consider the developmental nature of transferable skills. Measurement of transferable skills should capture the ecological settings around youth, especially as youth enter the labor market, and how these settings affect the way in which youth use their transferable skills. Another critical developmental concept is to focus on skills that represent competence across different developmental domains. These skills are more predictive of overall well-being in youth (Kautz et al. 2014). Moreover, measures of transferable skills need to account for the strengths that youth bring with them into decent work. While addressing deficits in youth skills can allow us to identify needs, understanding assets allows us to better capture how and when youth use specific skills in the labor market.

The measurement of transferable skill in LMICs needs to proceed in an iterative manner that recognizes the challenges of measuring these skills. In this chapter we

used the case study of the DAP in YiA and cherry-picked three examples in the process of tool adaptation, administration, and interpretation. We did this to provide an example of the kinds of challenges that emerge as we measure transferable skills in youth work readiness programs in LMICs. Rather than attempting to reproduce similar measurement in every context, we need to realistically account for the diversity inherent in measuring behaviors and skills and proceed thoughtfully through the process of adaptation, administration, and interpretation.

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Chapter 12
Tracing the Connections Between Sustainable Development, Bullying, and Cyberbullying: The Case of Thailand

Ruthaychonnee Sittichai, Timo T. Ojanen, and James Burford

Introduction

Bullying, including cyberbullying, is a serious threat to human rights regarding health, safety, dignity, and freedom from violence and discrimination. A comprehensive body of work, reviewed by UNESCO (2017), has identified how bullying impedes the universal right to education, as initially proclaimed in the *Universal Declaration of Human Rights* (United Nations General Assembly 1948), and established that unsafe learning environments undermine the rights articulated in the Convention on the Rights of the Child (United Nations General Assembly 1989).

The objective of this current chapter is to outline the connections between bullying and the 2030 Agenda for Sustainable Development and to unpack the role that developmental scientists might play. We begin by discussing definitions of bullying and cyberbullying. We then introduce the country context of Thailand, which is our primary area of focus, and provide an overview of bullying and cyberbullying research conducted in the country. Following this, we review studies describing the characteristics, prevalence, causes, and consequences of bullying, how victims cope and what is being done to address bullying. Next, we examine the SDGs and their indicators that relate to bullying and cyberbullying, using Thai research to indicate

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empirically documented connections. We conclude the chapter by reflecting on the contribution that developmental science can make to address the challenge of bullying and cyberbullying.

Bullying Definitions

Globally, bullying research stretches back over three decades (Sittichai and Smith 2013). The term bullying is typically defined as "intentional and aggressive behavior occurring repeatedly against a victim where there is a real or perceived power imbalance and where the victims feel vulnerable and powerless to defend themselves" (UNESCO 2017, p. 15). This definition stems from the work of Olweus (2013), a pioneering bullying researcher. Despite the broad acceptance of this definition, a systematic review of measurement tools for bullying indicated that only a minority of the instruments actually conformed to this standard (Vivolo-Kantor et al. 2014). Therefore, bullying prevalence estimates found in different studies may not be comparable.

The standard bullying definition is problematic in relation to contemporary uses of technology. Increasingly, bullying not only occurs in its traditional forms, commonly thought of as "being physical, verbal, or relational (such as social exclusion), and direct (face-to-face) or indirect (such as rumor-spreading)" (Sittichai and Smith 2013, p. 32). Today, cyberbullying (using mobile phones and the Internet) is also a common issue. What constitutes repetition of bullying behaviors online is debatable as even a single online incident can cause lasting harm, while the demeaning contents remain accessible online. The nature of power differentials can also be different than in the offline world, for example, the bully might have more advanced information technology skills rather than a bigger, stronger body (Ojanen et al. 2015).

The terms used for bullying or related forms of aggression in different countries also complicate the comparability of findings (Smith et al. 2002). In Thailand, the English term bullying corresponds to several Thai language concepts. Smith et al. (2002) identified three corresponding terms: *nisai mai di* (bad habit, generally bad behavior); *klaeng,* referring to more verbal behaviors, and *tham rai,* referring to more physical behaviors. Two other common terms are *rangkae,* which is often understood as physical aggression, and *kaorao,* which refers to aggression in general (Sittichai and Smith 2013).[1] A study by Mahidol University et al. (2014) identified a continuum of terms from *yok lo* (usually considered friendly teasing) to *rangkae* (severe bullying); *klaeng* is ambiguous as it can be used in either sense. This study concurred with the Smith et al. (2002) study that *rangkae,* which is the term usually used academically for bullying, was quite narrowly understood by both students and teachers, who might not understand *rangkae* as involving nonphysical, less severe forms of bullying.

[1] We have aligned the spelling of Thai terms with the official transcription system used in Thailand.

Thailand: Country Overview and Schooling Context

The Kingdom of Thailand is situated in the center of mainland Southeast Asia. It has a population of around 65 million people, 93% of whom practice Buddhism, 5.2% are Muslims, and 1.2% are Christian or practitioners of other religions (National Statistical Office of Thailand & Ministry of Information and Communications Technology 2016, p. 13). The official language of Thailand is Central Thai. However, according to *Ethnologue* (Lewis et al. 2016), around 20 million people speak it as their first language, whereas another 40 million speak it as a second language. Northeastern, Northern, and Southern Thai are the most common regional dialects. Many other minority languages are also spoken. The 2010 Population and Housing Census (National Statistical Office of Thailand 2011) estimated that around 96% of the population are Thai nationals; the remaining 4% comprised mainly of Burmese, Laotian, Cambodian, and Chinese nationals.

Thailand has 9 years of free and compulsory education (National Statistical Office of Thailand & Ministry of Information and Communications Technology 2016). The Thai basic education system covers grades 1–12, with 6 years of primary schooling, 3 years of lower secondary education, and 3 years of upper secondary schooling (general or vocational; OECD/UNESCO 2016). Enrolment in primary education is nearly universal in Thailand, with high levels of participation in lower secondary and moderate levels of participation in upper secondary schooling (OECD/UNESCO 2016, p. 46). The Thai government is a significant investor in education. Typically, education takes the largest share (over 20%) of the national budget (OECD/UNESCO 2016, p. 64). Some estimates suggest that education spending accounts for up to 5% of gross domestic product, making Thailand a top investor in education relative to its size (Punyasavatsut 2013). Yet, equitable access and the performance of the Thai education system remain a national concern.

The three southernmost provinces of Thailand (Pattani, Narathiwat, and Yala), located near the Malaysian border, also called the Deep South, have distinct historical, ethnic, linguistic, and religious features. The population is mostly Muslim and speaks a Malay dialect. Since 2004, there have been violent conflicts between separatist militants and the Thai state, resulting in thousands of deaths. A comparative cross-province study (Pradubmook-Sherer and Sherer 2014) found that a Deep South province had significantly higher levels of youth violence among both boys and girls than two reference provinces and suggested that the political violence in the region may make peer relations there more violent than elsewhere in Thailand. An earlier study by the same authors (Pradubmook Sherer and Sherer 2011) found that the level of violence in a community was the most important predictor of violence perpetration by youth. Thus, specific contexts like the Deep South merit context-specific research attention on bullying and violence, and some studies have indeed specifically focused on this area (e.g., Laeheem et al. 2008).

School Bullying and Cyberbullying: A Review of Thai Literature

In the *World Report on Violence Against Children*, Pinheiro (2006, p. 122) identified that Thailand had only recently begun to focus on school bullying. While it may have been true in the mid-2000s that Thai bullying research was in its infancy, this remark needs to be seen within a context where Thai studies on any topic are often only documented as a thesis or a research report, and even many academic journal articles are published only in Thai, making them inaccessible to a global audience.

Before a focus on bullying emerged, many Thai authors conducted research organized around the concept of youth violence. Nanthaphan Chinlumprasert (2003) reviewed 17 Thai youth violence studies published before 2002, and new studies have since emerged on the topic (Tapanya and Phoothong 2016). This literature is relevant to discussions of bullying because bullying is a type of violent behavior. Many bullying studies that do not conform to the standard definition of bullying may actually measure youth violence. Even when bullying and youth violence are distinguished, many of their correlates, causes, and consequences will be the same. This makes studies on both problems comparable, and we do refer to some youth violence studies in this chapter. However, the specific characteristics of bullying may make it particularly harmful for the victim. This has been empirically documented in research conducted outside Thailand. For example, Hunter et al. (2007) found that victims of bullying were more depressed and felt less in control than victims of peer aggression in general.

In a 2013 literature review on bullying and cyberbullying in Thailand, Sittichai and Smith identified seven existing studies and one extended newspaper report that included the word bullying, cyberbullying, or an equivalent Thai word in their titles. Only three studies measured bullying in a way that distinguished it from aggression or violence in general. Reviewing these studies, Sittichai and Smith (2013, p. 39) found that "bullying-like behaviors are not infrequent in Thailand" and argued that some findings from the Thai literature corresponded to Western findings. For example, victims are more likely to have low self-esteem, and bullies are more likely to have witnessed domestic violence. However, Sittichai and Smith were unable to ascertain whether the nature and forms of bullying in Thailand were more or less similar to Western contexts or the Global South.

Key findings from these studies included information about the nature of bullying and its public perception. For example, Sombat Tapanya (2007) surveyed bullying among 2300 students. He found that bullying was particularly common in upper primary and lower secondary grades across Thailand and that psychological/verbal bullying was its most common form. A further finding was that bullying among children was widely considered to be a normal behavior.

Discussing the state of bullying research in Thailand, Sittichai and Smith (2013) identified methodological gaps that made drawing solid conclusions more difficult. Although a majority of the studies surveyed by Sittichai and Smith used a quantitative approach, they did not have sufficiently representative samples for making national

generalizations. Sittichai and Smith called for more qualitative research to establish the range of bullying-like phenomena and more attention to cyberbullying, the absence of which from the majority of studies the authors found "particularly regrettable" (p. 40).

In the following years, other scholars responded to Sittichai and Smith's (2013) call for a "more focused research program on the topic" (p. 40) of bullying and cyberbullying. For example, a study featuring focus groups and interviews with 136 Central Thai adolescents (Samoh et al. 2018) provided qualitative evidence on cyberbullying. Many of these adolescents considered cyberbullying a normal behavior. The study highlighted the problem of defining cyberbullying, because most studied adolescents did not consider repetition or a power imbalance crucial for considering a behavior cyberbullying. Instead, the relationship between the parties involved was crucial; a vulgar message online from a friend might count as friendly teasing, but coming from an adversary, it would count as cyberbullying. The point on which these adolescents agreed with the standard definition of bullying was that a given behavior had to cause harm and be motivated by malicious intent to count as bullying.

A cross-cultural study compared bullying and cyberbullying among adolescents (n = 1928) in Thailand, Germany, and the Netherlands (Wachs et al. 2015). The proportion of Thai adolescents, who were involved in traditional bullying or cyberbullying, or both, was significantly higher than among their Dutch or German counterparts. The Thai sample group also had comparable levels of involvement in cyber-(24.1%) and traditional (24.7%) bullying, whereas traditional bullying was clearly more common in Europe. Kowalski et al. (2014) have argued that the cultural characteristics of collectivist countries with high power distance make cyberbullying comparatively more likely, and indeed a 25-country study on bullying and cyberbullying incidents (Microsoft 2012) found that only China and Singapore had higher online than offline victimization rates. Thailand shares collectivist, high power distance characteristics with these countries, which may explain the relatively high levels of cyberbullying reported by Wachs et al. (2015).

Gender has recently been a focus of bullying and violence research in Thailand. Many studies have found that boys perpetrate more violence or bullying and are also victimized more than girls (e.g., Pradubmook Sherer and Sherer 2011; Sombat Tapanya 2007). Sittichai (2014) reported that among 1183 students in Southern Thailand, boys were significantly more often victims of cyberbullying than girls and noted that this finding was at odds with most Western studies. Likewise, in a study of 1234 youth in Central Thailand, Ojanen et al. (2015) found that boys had higher victimization and perpetration rates than girls, both online and offline. The finding about greater male involvement in violence, bullying and cyberbullying, might stem from gender roles which legitimate the use of violence among boys.

Perceptions related to gender identity and sexual orientation have also been studied in relation to bullying. Mahidol University et al. (2014) surveyed 2070 students across Thailand. The cluster sampling method used in the study aimed to make it a nationally representative study of general (non-vocational) secondary students in Thailand. The study sampled students in general, but the large sample size made it

possible to disaggregate the data for lesbian, gay, bisexual, transgender (LGBT) and non-LGBT identities. In this survey, 55.7% of LGBT-identified students reported one or more types of victimization (physical, 30.9%; verbal, 29.3%; social, 36.2%; and sexual, 24.5%) that they perceived was based on their identity in the past month. Furthermore, 24.5% of students who did not identify as LGBT also reported having been victimized due to being perceived to be LGBT (Mahidol University et al. 2014). This indicates that gender- and sexuality-related perceptions and prejudice may be an important cause of bullying regardless of the victim's actual identity.

The Impact of Bullying and Cyberbullying

Previous Thai studies have documented various impacts of bullying victimization. Sunchai Nongtrud and Koensak Srisuay (2014) noted that bullying victimization may cause youth to lose educational opportunities. For example, experiences of violence or the fear of violence may increase attrition rates and impede academic performance. In the Mahidol University et al. (2014) study, roughly 31% of secondary students victimized for whatever reason had unauthorized absences in the past month, compared to just 15% of those not victimized; those who were not victimized also had significantly higher grade point averages.

Bullying victimization can also have important consequences for the health and well-being of young people. According to the Mahidol University et al. (2014) study, 1.2% of students not victimized attempted suicide in the preceding year, in contrast to 6.7% of students victimized for reasons related to perceived sexual orientation or gender identity or to 3.6% of students victimized for other reasons. Victims were also significantly more likely to be depressed, drink alcohol, and engage in risky sex. Sopitarchasak et al. (2017) likewise reported on elevated levels of peer victimization, depression, and suicidality among sexual minority males in a study of 1250 secondary students in Bangkok.

Thai cyberbullying studies have paid relatively little attention to the consequences of cyberbullying. We are aware of only one Thai study on the health consequences of cyberbullying. Nattharat Samoh et al. (2017) focused on a sample of 1,723 secondary school students and found that victims of cyberbullying were significantly more likely to be depressed, to have engaged in unprotected sex, and to have attempted suicide in the last 1 year than non-victims.

Sunchai Nongtrud and Koensak Srisuay (2014) described how violence can be transmitted across generations; children who are victimized are more likely to use violence in adulthood. Furthermore, they identified economic and social opportunity costs as an important impact of bullying. Lost educational opportunities, physical and mental health problems, and experiences of violence (either as a perpetrator or a victim) are correlated with limited socioeconomic opportunity. On the national level, the resulting higher burden of ill-health and lower educational achievement results in increased health-care expenditures and reduced human capital.

Coping Strategies

With regard to strategies for coping with bullying in Thailand, Sunchai Nongtrud and Koensak Srisuay (2014) described typical reactions among students: (1) help-seeking, (2) suffering in silence, or (3) fighting back alone or with friends. The Mahidol University et al. (2014) study indicated that the latter two were by far the most common: only around one third did anything in response to being victimized, and two thirds of those, who did something, chose to fight back. Roughly 15% of victimized students told a friend, around 6% told their parents, and fewer than 3% told a teacher or sought help from other sources.

When victimized students were asked why they did nothing, most (52.5%) responded they simply did not want to do anything (Mahidol University et al. 2014). Roughly a fifth (18.5%) thought nobody would believe them, and 22.8% thought that even if they told someone, nothing would happen. In in-depth interviews, some victims said they had tried telling teachers, but the teachers had ignored or blamed them. According to Sunchai Nongtrud and Koensak Srisuay (2014), other possible coping strategies included calling helplines or offering money or other objects in exchange for the perpetrator to cease bullying.

Reactions to cyberbullying documented by Samoh et al. (2018) mirrored reactions to traditional bullying in that adults were rarely involved: victims suffer in silence, try to block the cyberbully using the functions of their online platform, or even stop using the platform for a while. Telling an adult, such as their parent, is only an option in extreme cases. The interviewed youth were conscious that telling a parent could backfire, because the parent might disallow them to use the Internet or put the blame on them. To our knowledge, though there are mechanisms to report cyberbullying to the authorities, this option is rarely used because victims do not receive tangible assistance to solve their problem.

Interventions and Their Limitations

Various researchers, public agencies, and intergovernmental and civil society organizations have conducted anti-bullying interventions in Thailand (Tapanya and Phoothong 2016; UNESCO Bangkok 2016). The Student Protection Center at the Office of the Basic Education Commission (Ministry of Education), which oversees primary and secondary schools, has disseminated anti-bullying manuals to schools and responds to reported incidents. However, only the most severe cases are usually reported to the Student Protection Center. UNESCO Bangkok has coordinated national and regional research, advocacy campaigns, and consultations and provided training in the use of violence prevention materials. Plan International, Thailand, has conducted activities to reduce anti-LGBT bullying in selected schools. Raks Thai Foundation has arranged bullying awareness training for students, produced an anti-bullying manual for teachers, commissioned anti-bullying songs, and arranged a poster competition on bullying awareness (UNESCO Bangkok 2016).

Unfortunately, these efforts have not been documented in research studies, and data about actual changes in bullying levels have not been publicly reported (Tapanya and Phoothong 2016). Improving the monitoring and documentation of existing anti-bullying efforts is a clear priority. Internationally successful anti-bullying programs (Della Cioppa et al. 2015) could be tested in the Thai context but would need to be accompanied with research to document whether they work as intended.

On the school level, a government-commissioned survey of school directors indicated that bullying is perceived as a less pressing problem than fights or drug abuse (UNESCO Bangkok 2016). Correspondingly, the Mahidol et al. (2014) study found that most Thai schools did not have curricula, regulations, or monitoring programs to address the issue. Most schools were found to react only when serious incidents happen, through ad hoc measures, such as punishing the bully (Mahidol University et al. 2014).

We are aware of few interventions to reduce cyberbullying. Some governmental television programs have warned Thai adolescents about cyberbullying in daily life. A website operated by Path2Health Foundation, together with UNICEF and a mobile network operator, provides information and a live chat function for youth facing bullying either online or offline (http://stopbullying.lovecarestation.com/).

The first author of this chapter is currently designing a research-based Cyberbullying Mobile Application (CBMA) to increase Thai adolescents' knowledge about cyberbullying. The research for the application focused on the level of high school and university students' (n = 250) knowledge of cyberbullying. After releasing the CBMA for pilot testing among the same group of users, the as-yet-unpublished study found that users appreciated it and had confidence in the application; some said they would keep using it. The CBMA is a promising tool to educate adolescents about how to handle cyberbullying.

The Sustainable Development Goals: Implications for Bullying and Victimization

In September 2015, the member states of the United Nations (UN) agreed on the 2030 Agenda and its 17 Sustainable Development Goals (United Nations General Assembly 2015). The SDGs are based on the notion that when environmental, economic, and social aspects of development are well-balanced, the resulting development is more sustainable than if only one aspect is the central focus. They represent a global agreement to pursue 17 broad goals to be achieved by year 2030. The goals are accompanied by specific targets, and these targets are in turn given operational definitions in 230 unique indicators[2] that are more specific and measurable than the goals themselves (Inter-Agency and Expert Group on Sustainable Development Goal Indicators 2016).

[2] The SDG and indicator numbers refer to numbering in the document accessible from https://sustainabledevelopment.un.org/content/documents/11803Official-List-of-Proposed-SDG-Indicators.pdf.

The term bullying is not used in the SDGs or their targets or indicators. However, several indicators relate to forms of aggression that overlap with bullying. Other indicators relate to health or social outcomes that are negatively affected by bullying, in the light of previous research. Yet other SDG targets or indicators refer to infrastructure or legislation that would help to reduce bullying if achieved. Bullying thus needs to be considered in discussions about these SDGs. UNESCO (2017) has acknowledged this need in a report drawing on global evidence on school violence and bullying, and other studies have also begun to trace some of these connections (Mills 2015; Sharma et al. 2016). Our analysis of the SDGs and their relationship to bullying is more detailed than that presented by UNESCO, and we unpack these connections mostly by drawing on evidence from Thailand.

Goals, targets, and indicators referring to violence. The connection between the SDGs and bullying is obvious in the case of SDG targets referring to violence reduction, because bullying is a form of violence (UNESCO 2017). Violence reduction is explicitly referred to in SDG targets 5.2, 16.1 (indicators 16.1.3 and 16.1.4), and 16.2 (indicator 16.2.3). Goal target 16.2 refers to violence against children and is particularly relevant for school bullying. The indicators of these goals explicitly refer to physical, sexual, and psychological violence, but not to their cyberspace variants. Involvement in online harassment is associated with involvement in offline violence (Ojanen et al. 2015), so cyberspace victimization should be seen as an extension of violence in the offline world and given the attention it deserves.

The above SDG targets link violence to its root causes, such as gender inequality (target 5.2), discriminatory policies (target 10.3), or the lack of safe spaces (target 11.7). Bullying often has a gendered aspect and is considered a form of school-related gender-based violence (UNESCO & UN Women 2016). For example, school bullying is often motivated by inflexible gender role expectations or prejudice against nonnormative gender expression or perceived sexual orientation of the victim (Mahidol University et al. 2014).

The study conducted by Mahidol University et al. (2014) also linked bullying to the lack of safety in school areas such as toilets (SDG target 11.7) and discriminatory policies (SDG target 10.3), for example, school regulations that specify mandatory gendered uniforms, hairstyles, and choice of toilets for students based on their birth sex alone. Such policies are experienced as humiliating by transgender students (4.6% of all students in the study), and with the lack of adult supervision in school areas, they expose transgender students to bullying. As outlined in the Yogyakarta Principles (2006), which provide guidance for the application of existing international human rights law in relation to sexual orientation and gender identity, mistreatment on the basis of sexual orientation or gender identity is a form of gender-based discrimination and thereby forbidden by international law.

Goals/indicators negatively affected by the consequences of bullying. Two SDG targets (3.4 and 4.1) refer to outcomes that are affected by bullying.

Indicator 3.4.2 refers to the suicide mortality rate. At least two studies in Thailand have shown a link between suicide attempts and bullying victimization (Mahidol University et al. 2014; Sopitarchasak et al. 2017). Suicide mortality is more difficult to assess than suicide attempts, but some suicide attempts do result in death,

so reducing the root causes of suicide attempts among youth is crucial for meeting this target.

Target 4.1 and its indicator 4.1.1 refer to primary and secondary education completion rates and students with minimum proficiency levels at the end of primary and secondary school. As discussed above, bullying victimization is associated with lower grades and increased absenteeism (Mahidol University et al. 2014). Absences and low grades are likely to be associated with premature termination of education and not achieving specified proficiency levels.

Goals/indicators whose achievement could reduce bullying. Several SDG targets (4.7, 4.a, 16.3, 16.a, and 16.b) refer to policies and infrastructure that could help to reduce bullying.

Building respect for human rights and gender equality among students (Target 4.7), for example, through the national curriculum (Indicator 4.7.1), could reduce bullying perpetration levels. In Thailand, a review by the Ministry of Education, UNICEF, Mahidol University, and Thammasat University (2016) indicated that sexuality education as currently implemented covers these topics insufficiently. For example, roughly 35% of general secondary and vocational students (n = 8837) indicated that bullying-related topics were not covered. Forty-seven percent thought that a husband is sometimes justified in beating his wife, and 36% thought that same-sex sexual relations are wrong. Such attitudes legitimize gender-based bullying and violence.

Target 4.a refers to safe, non-violent, and inclusive learning environments, which are essential for stemming school-based bullying. With learning increasingly taking place online, this provision should extend to online spaces, although these are not mentioned in the relevant indicator (4.a.1). The same indicator espouses single-sex sanitation facilities for schools. Single-sex toilets may improve the safety of gender-normative girls. However, they are problematic for transgender students, who may be targeted for bullying in or around the toilets intended for their birth sex and forbidden to use the toilets matching their de facto gender (Mahidol University et al. 2014). Providing additional unisex toilets in areas supervised by teachers would be essential for enabling transgender students to use the toilets safely during their school day.

Target 16.3 covers access to justice, and its indicator 16.3.1 refers to the proportion of victims of violence that report their victimization to the authorities. Here, school bullying victims are particularly underserved. The Mahidol University et al. (2014) study indicated that fewer than 3% of bullying victims reported the victimization to a teacher and even fewer to other school personnel or outside agencies. The findings suggested that victims do not expect reporting to help them. Schools should do more to encourage students to report bullying and to ensure that it results in tangible assistance to the victim.

Target 16.a refers to nations' capacity to prevent violence. In school contexts, much more needs to be done, at least in Thailand. However, the indicator for this target (16.a.1) only refers to the existence of national human rights institutions. Thailand has a National Human Rights Commission, but for individual school bullying or cyberbullying victims, the mechanism is far too distant for providing tangible assistance. Although not covered in the indicators, legislation on ICT use is

also relevant. Thailand has a Computer-Related Crime Act, but it has been critiqued for being a tool for censorship and political repression rather than for curbing cyberbullying (Human Rights Watch 2016).

Target 16.b refers to laws and policies for sustainable development, and its indicator (16.b.1) refers to the proportion of the population that felt discriminated against or harassed. Anti-bullying laws and policies covering both offline and online spaces would be a helpful provision under this goal. Thailand does not have such laws, but the Philippines, for example, does have a specific anti-bullying law (Republic Act No. 10627, 2013) that mandates schools to monitor and report bullying incidents and devise plans for reducing bullying in and around the school. School policies promoting inclusiveness and fair treatment of students regardless of gender, sexual orientation, gender identity, or disability could also be very helpful.

The Way Forward: Developmental Science, Bullying, and the SDGs

The important role that developmental science plays in generating evidence about the nature and prevalence of bullying and assessing the efficacy of interventions against bullying has been recognized (Berger 2007; Smith and Jones 2012). Smith and Jones identified at least seven key areas of research in their review of the field: neuropsychological aspects; quantitative genetic investigations; developmental neuroscience; callous-unemotional traits and conduct problems; the individual, group, class, and school; developmental changes, such as age and context; and cross-cultural aspects, language, and behavior. As our review of Thai research on bullying indicates, some of the above aspects have received less attention than others. For example, we are not aware of any Thai bullying studies focused on genetics.

On a global level, developmental science has already offered significant contributions to understanding bullying and its impacts. However, Smith and Jones (2012, p. 73) challenge practitioners of developmental research to pursue interdisciplinary studies combining "biological, developmental, group psychological, and cross-cultural approaches."

In response to the SDGs, development scientists have begun to identify key areas for action in the field. For example, Raikes et al. (2017) have tracked the historical significance of developmental science for the SDGs and pathways forward for the field. While the authors identified that the key goal for developmental science is SDG4, they also traced the role developmental science can play with other SDGs. According to Raikes et al. (2017), action from developmental scientists is needed in at least three broad areas:

1) Generating locally and globally relevant information on the nature of human development in diverse contexts, including experimental studies, primary and secondary data analyses, program evaluations, and longitudinal studies to inform policy development

2) Ensuring reliable measurement and monitoring to identify patterns of success and inequity
3) Building capacity for SDG- and policy-relevant developmental science across and within all countries (p. 7)

Given these insights, the question that remains to be answered is how the 2030 Agenda impacts on the work of developmental scientists working in the area of bullying research. We think the Agenda offers an important opportunity for developmental scientists to inform new policy-making and practical interventions emerging through this global momentum. Further work is needed to understand how bullying relates to familial and sociocultural contexts. Scholarship contributing to a broader understanding of the magnitude and effects of bullying will play an important role in strengthening global advocacy, ensuring that this area receives sufficient investments. Developmental scientists may also lend their skills to the development and application of new interventions for reducing bullying-related harm.

Developmental research on bullying in alignment with the SDGs requires further integration, for example, across particular research methodologies, study sites, and cross-sectional and longitudinal research. In addition, research on bullying outside of the Global North needs to be prioritized among researchers and funding bodies. This emphasis on context applies not only to the location of data but also the location of developmental scientists. In the age of the SDGs and their focus on leaving no one behind (UNESCO 2017), bullying researchers in the Global South should receive more mentoring. Working to support emerging bullying researchers in the Global South will pay dividends as they bring their diverse knowledge projects into the field. The Global South is not only a periphery where data can be mined by developmental scientists. Southern developmental scientists may also develop new concepts, theories, and methodologies from their indigenous knowledge contexts.

Ultimately, developmental science researchers work to ensure that children and young people around the world achieve healthy development. We hope that the SDG framework offers momentum to carry this important work forward.

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Chapter 13
Child Marriage and Early Transitions to Adulthood in Mexico

Julieta Perez-Amador and Silvia Giorguli

Introduction

The transition from youth to adulthood in Mexico occurs relatively early in the life course compared to countries of similar development. Judging by the median age at occurrence of the traditional five markers in the transition to adulthood (leaving school, getting a job, leaving the parental home, getting married, and becoming a parent for the first time), young women growing up around the beginning of this millennium were completing the transition to adulthood by age 23. In comparison to recent trends in developed and developing countries, Mexican women are indeed becoming adults at a relatively young age; and at these early ages, the paths they take further shape their later lives. In addition, the timing of the transitions differs vastly depending on characteristics such as the place of residence, socioeconomic backgrounds, and ethnic origins. In spite of the delay in some of the transitions—specifically on the timing for leaving school—large differences prevail and have even broaden in other transitions, such as those related to family formation.

Research on youth, in general, and on the transitions to adulthood, in particular, has emphasized the importance of this stage in the life course as a period where different access to opportunities most likely reproduce social disparities, creating dynamics of persisting inequality with important consequences for future life trajectories (Shanahan 2000; Booth et al. 2012). In the last decades, the passage into adulthood in Mexico has happened during a period of social and demographic transformations that particularly affected young people. On the one hand, the educational system continued expanding closing the gender gap in educational attainment but creating diversification and stratification in the quality of educational tracks. In

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addition, recursive economic crises resulted in uncertainties regarding a successful incorporation into the labor market for young men and women. On the other hand, family formation patterns became very heterogeneous; young people of different socioeconomic origins follow remarkably different timing and pathways in the transition to marriage and parenthood.

In this chapter, we focus our attention on early marriage; we aim to highlight the obvious, but often ignored role, in premature childbearing and its relation to early school leaving. The increasing heterogeneity in the transition to adulthood in Mexico, we argue, is a result of the persistence of early transitions out of formal education soon followed by early family formation among young women at the bottom of the socioeconomic scale and a gradual, but constant, delay in such transitions among those at the top of the socioeconomic scale. Describing socioeconomic and demographic differentials in child marriage rates in contemporary Mexico and emphasizing its connection to early exit from formal education and to early motherhood are particularly important given the fact that successive cohorts of young people in Mexico are supposed to increasingly benefit from the economic and social development achieved over the previous century; paradoxically, however, they appear to be growing up in circumstances of increasing inequality and polarization in the transition to adulthood.

We discuss our results not only in regard to the particular context of the Mexican society, but also in the context of global development given their relation to attaining the Sustainable Development Goals (SDGs) by 2030. Eradicating child marriage is one of the targets of SDG 5 "Achieve gender equality and empower all women and girls"; meeting the target, however, will contribute directly or indirectly to meet at least other 6 of the 17 SDGs. As early marriage is related to school attainment, especially among teenage girls, its eradication should contribute to attaining SDG 4 "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all." In addition, the delay in the age at marriage can potentially contribute to break the reproduction of social inequalities and decrease the differentials in socioeconomic outcomes adding to the attainment of SDGs 1 "End poverty in all its forms everywhere," 10 "Reduce inequality within and among countries," and 3 "Ensure healthy lives and promote well-being for all at all ages."

Regarding the latter, early marriages are related to teenage pregnancies, which we know have a higher risk of death and have less often prenatal care; the eradication of child marriage could eventually have an impact on infant mortality and morbidity and on the indicators of maternal health (UNPFA 2012). Furthermore, if the delay in child marriage is related to greater opportunities for young women, it may result in a greater and more advantageous participation in the labor market for the youth and it may increase female labor participation rates, which are related to SDG 8 "Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all." Finally, the eradication of child marriages can also contribute to SDG 16 "Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels," which include among its targets the reduction of physical, psychological, and sexual violence.

Current Demographic Trends in the Transition to Adulthood in Mexico

The transition to adulthood among Mexican women occurs earlier, and it is faster than men's. Data from the 2010 National Survey of Youth show that the median age of leaving school was 19 for men and 18 for women (see Fig. 13.1); the interquartile range, usually interpreted as the time it takes a cohort to complete a given transition, differs by about a year. Thus, the gender gap in education is relatively small. Gender differences are more salient in the transition into the labor market. Men have an earlier and more compacted transition than women, which gets completed in less than 4 years. The men's median age at first job is 16.4 years; 25% of them start working by age 14 and 75% by age 20. In contrast, women start this transition 1 year later according the age at which 25% of them get their first job and also to the median age, which is 17.6; but it is until the time they are 23, when 75% of them have made the transition. The interquartile range for women is, therefore, twice as large as that of men's.

Family markers in the transition to adulthood are very different between men and women. There is a gender gap of 5 years in the median age at first union (see Fig. 13.1) and a 3-year gender gap in the age at which 25% of them have made the

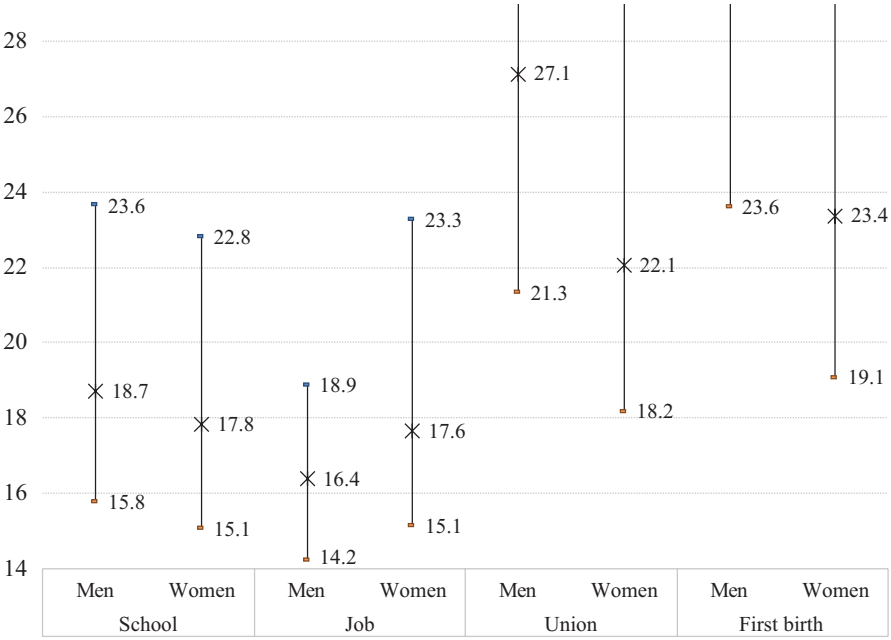

Fig. 13.1 Median and quartiles of age at four markers in the transition to adulthood: school leaving, first job, entering conjugal unions, and first birth among young men and women
Source: ENJ (2010). Young people 15–29 years old (N = 23,408)

transition. The median age at first union for women is 22 and for men 27. In 2010, about 71% of young women and 47% of young men had entered the first union by the time they are 29 years old (data not shown). Gender differences are even more dramatic in the timing of first birth: women's median age at the transition is similar to the age at which 25% of men have become fathers (23.4 and 23.6, respectively), while 25% of women become mothers before the age of 20. By age 29, neither men nor women have reached a cumulative proportion of 75% becoming parents, which reflects an increasing heterogeneity in family formation among Mexican youth. While some of them complete family formation transitions very early in life, others delay them to their 30s. As we will discuss throughout the chapter, early marriage and childbearing separate the destinies of young people.

Institutional Settings and the Transition to Adulthood in Mexico

The transition to adulthood reflects and is linked to the prevalent social inequality. Trajectories for the youth tend to be more heterogeneous in a highly stratified society in terms of the access to education and the organization of the labor market. The structure of social inequality interacts with institutions, such as the school system, defining the timing and ordering of some of the transitions to adulthood. Institutions set, for example, the normative ages for some of the transitions to occur; that is the case of the compulsory years of schooling and the legal age to start working or to get married. In Mexico, there has been a large expansion in public schooling that is linked to the increase of enrollment during the teenage years; gender gaps in education have disappeared and in some cases even reversed (at tertiary level). However, there is prevailing stratification in quality of the educational services; schools are quite different between rural and urban areas, by type (technical, long distance, general education) and provider (public or private) (Angoa et al. 2017).[1]

In Mexico, as in other family-oriented societies, participation of women in the labor force has remained low, around 45% according to recent estimations (Angoa et al. 2017), as they are often the main care providers, which limits their permanence in the labor market. Particularly for young mothers, their role in child-rearing and as caregivers constrains their entry into the labor force as the increase in public childcare has been limited (in most cases, it is available only to those in the formal sector) and there is no support for mothers with children in school (most primary public schools have shifts from 8 am to 12 pm, and there are few options of

[1] During the first decade of this century, there was a large increase in lower secondary education (7 to 9 years of schooling). In the poorest states (Oaxaca and Chiapas), the expansion was possible because of the increase in the number of students enrolled in distance learning (*telesecundarias*). Although the official goals of coverage were fulfilled, social inequality was not reduced as the quality of education and the test results for students in this modality were notoriously lower (Cárdenas 2010).

extended-stay or after-school programs). As a result, the participation rates of young women (20–24) with children are less than half than the same rates for young women with no children (15% versus 35%). This distance in the labor participation rates of women with and without children is kept along the different age groups (Angoa et al. 2017). Thus, even though the proportion of women ever entering into the labor market by age 30 increased considerably in the last decades, from about 75% among women born in the early 1950s to around 90% among those born in the late 1970s (Perez-Amador and Giorguli 2014), about half of them had the opportunity to stay uninterruptedly to fully develop their careers (Blanco and Pacheco 2003; Ariza and Oliveira 2005).

Institutional structures, such as the family system (along with the educational system, labor market, and social welfare), play an important role in delineating opportunities and constrains that young people face during the transition to adulthood (Liefbroer 2005; Mills and Blossfeld 2005). In Mexico, family support becomes essential to cover care needs and to face situations of social and economic vulnerability (Giorguli et al. 2009). For young Mexicans in particular, family defines the resources available to stay in school and the social capital transferable into connections within the labor market; families help financially during periods of unemployment or when waiting for better job opportunities; they give financial, social, and emotional support for those who marry and/or have children at early ages (Giorguli 2011).

Public policies targeting Mexican youth emerged during the second half of the previous century. The National Institute of Mexican Youth was created in 1950 with the goal of providing recreational activities such as arts and sports for young Mexicans, almost 40 years later, and after some internal transformations, the institute disappeared, and its attributions were absorbed by the National Sports Commission. It is not until 1998, after the United Nations adopted the World Program of Action for Youth to the Year 2000 and Beyond in 1995, that the Mexican government creates the Mexican Institute for Youth and launches the first National Program of Youth 2002–2006 that focuses mainly on eradicating inequalities in health, education, and the job market. This first program was followed by the National Program of Youth 2008–2012 and by a newest version for the 2014–2018 period. The major emphasis of the programs continued to be on education; labor market; health, including sexual and reproductive health; and drug abuse, as well as recreation activities and social and political integration. In the newest version, there are goals for achieving gender equality and to eliminate all forms of violence against young women; prevention of early pregnancy is listed as one of the strategies to attain and maintain integral health. However, there is no explicit goal nor policies, in regard to the timing of family events in the transition from youth into adulthood despite the recent trends of increasing teenage pregnancy and fertility and cohabitation among young couples.

In the late 1980s, the Mexican teenage fertility rate was about 75 births per 1000 women 15–19 years old. The rate declined during the 1990s, remained relatively stable around 65 from 1998 to 2006, and then increased to 70 births per 1000 women 15–19 between 2007 and 2008 (Arceo-Gómez and Campos-Vázquez 2014). At that

level, the country had one of the highest rates among Latin American countries with similar level of development, just lower than Brazil but higher than Argentina, Chile, Costa Rica, Peru, and Uruguay. Isolated efforts to address teenage pregnancy and fertility by the Mexican government included, for example, the 2007 *PROMAJOVEN*, a program targeting teenage mothers' completion of primary and lower secondary education. In 2015, after the unexpected upraise in teenage fertility, the Mexican government launched the National Strategy to Prevent Teenage Pregnancy (ENAPEA) with the goal of reducing teenage pregnancy and fertility in a framework of human rights and gender equality. The Strategy, however, does not take any implicit or explicit action on child marriage despite its relation to early motherhood.[2] In Mexico, most of the teenage pregnancies happened within or linked to a first union (Giorguli 2011). According to the 2014 National Survey of Demographic Dynamics, 75% of young women 20–24 years old that gave birth between the ages of 15 and 19 were married or cohabiting (authors' calculations).

In 2014, UN Women in Mexico launched a campaign against child marriage. The campaign emphasized the socioeconomic and health consequences of the practice and its violation to basic human rights. It called for the harmonization of state legislations in order to establish the legal age at marriage at 18 in accordance to international agreements signed by the Mexican government in the past and to the 2014 General Law for Girls, Boys, and Adolescents (LGDNNA), which mandated the minimum age at marriage at 18, for both men and women, at the federal and state level. The campaign has been very successful in formalizing a normative change; as of April 2017, 24 of the 32 states have approved reforms to set the legal age at marriage at 18 with no exceptions.

As a result of the 2014 LGDNNA, the Mexican government launched the National Agenda "25 to 25," a plan of 25 goals to be achieved by 2025. The goals build on the UN Sustainable Development Goals, seeking to realize the human rights of girls, boys, and adolescents. The goals are grouped in four dimensions: survival (goals 1–5), development (6–13), protection (14–20), and participation (20–25). Goal 5 targets adolescent pregnancy. For the first time, it establishes the prevention and reduction of early unions as a target along with the prevention and reduction of teenage pregnancies. Given the recent release of the program, there is no information yet on how they plan to achieve the goal; however, it is extremely important that the reduction and prevention of child marriage is now officially a target considered as necessary to achieve the well-being of Mexican girls and adolescents.

[2] The ENAPEA recognizes that the sexual and reproductive behavior and needs of single and married/cohabiting teenage mothers are different and encourages institutions to address the two groups differently. However, there are no specific policies to decrease child marriage rates among girls and teenagers.

Previous Research on the Transitions to Adulthood in Mexico

Research on the transition to adulthood in Mexico has highlighted visible disparities in the timing and trajectories chosen by youngsters of different social groups. For instance, young men and women of lower socioeconomic status (SES) make earlier transitions out of school and into the labor market than their better-off peers (Echarri and Perez-Amador 2001, 2007; Oliveira and Mora 2008; Tuirán and Zúñiga 2000). They are also more likely to combine school and work (Giorguli 2011), entering into the labor market before completing high school or college, which has been related to higher probabilities of dropping out from school (Horbath 2004).

Socioeconomic differences are also evident regarding the sequencing of the transitions, i.e., the path or trajectory toward adulthood. For instance, entering the labor market is the first event in the transition to adulthood experienced by the majority of Mexican men and women (Echarri and Perez-Amador 2001, 2007); however, for most women in the lowest SES group, leaving formal education is the first event experienced in the transition to adulthood (Oliveira and Mora 2008). In fact, these women have very low rates of entering the job market, which translate into a lower probability of ever participating in the labor force. The authors therefore suggest that a double inequality of SES and gender manifests by giving these women the least opportunity for social mobility. An earlier study by Tuirán and Zúñiga (2000) also highlighted that gender differences in the transition to adulthood are sharper among low SES groups, not only regarding the transitions out of school or into the labor market but also those in the family sphere, where the gender gap in the age at first marriage and parenthood is particularly large.

Indeed, family transitions occur significantly earlier among young women with low educational attainment and/or low household socioeconomic status (Echarri and Perez-Amador 2016; Perez-Amador and Giorguli 2014). They are also more likely to choose cohabitation over marriage when making the transition into first union (Solís 2004; Perez-Amador 2008, 2016). In addition, among them, union formation often coincides with the transition into motherhood. Thus, the simultaneity and distance between events in the transition to adulthood is another aspect that highlights SES and gender differences.

Despite the fact that younger cohorts of Mexican men and women stay longer in school, delaying their entrance into the labor market, on average, and the timing of family transitions have remained fairly constant. This is contrary to the recent experience of other emerging economies, where the expansion in education and the increasing demand for skilled labor favored the postponement of the average age at first union and first birth. In Mexico, only the highly educated (university attendees and graduates) are delaying family formation transitions but with clear gender differences (Echarri and Perez-Amador 2016; Perez-Amador and Giorguli 2014).

In summary, the transition to adulthood in Mexico is diverse among young people of different socioeconomic groups and between men and women. In fact, some scholars argue that the life course of young Mexicans has never standardized (Coubès and Zenteno 2005; Perez-Amador and Giorguli 2014). Instead, the

variability and even the divergence in the timing and paths to adulthood reflect the increasing inequality, which paradoxically occurs in times of educational expansion.

Early Marriage and the Transition to Adulthood

International research shows that there are multiple risk factors associated with the transition to early marriage, highlighting poverty in its many dimensions (e.g., Bajracharya and Amin 2012) and gender bias, along with cultural and social norms. Studies about the consequences of child marriage suggest that child marriage often compromises girls' and adolescents' development and well-being throughout their life course by resulting in early pregnancy, interrupting schooling and limiting opportunities for labor force participation, thus continuing the circle of poverty. They also face early maturation and social isolation and are at increased risk of intimate partner violence (Kidman 2016).

One recent descriptive analysis in Mexico shows that one in every five young women married before they were 18. Early marriage in the country follows the typical negative gradient with education, socioeconomic status, and size of the locality of residence: women with less than 9 years of education, living in rural towns of less than 15,000 inhabitants, and from the lowest SES quartile have rates of child marriage near or greater than 30%, a level that is considered unacceptably high by many international organizations (e.g., UNPFA 2012). There are also important regional and state differences in the prevalence of early marriage; in 2009, 8 of the 32 Mexican states show child marriage rates of 25% or higher (Perez-Amador and Hernández 2015).

Research on the causes and consequences of child marriage in Mexico is scarce. As mentioned in the previous section, studies about the transition into first union consistently show that the lower the educational attainment, the household socioeconomic status, or the size of the locality of residency, the earlier the entry into marriage or cohabitation. Other less studied aspects such as growing up in authoritarian and restrictive family environment with deficient parent-child communication also accelerate the transitions from out of formal education and out of the parental home into first job, marriage/cohabitation, and parenthood (Echarri and Perez-Amador 2007). One study shows that young adults that experience family violence while growing up enter conjugal unions earlier than those who did not experience such violence (Perez-Amador 2009). This result, which is consistent with studies showing the relation to family violence and child marriage, suggests that early entry into marriage might be one of the mechanisms through which the circles of poverty and violence reproduce across generations.

Studies about early motherhood consistently show that most of teenage pregnancy and fertility occur within conjugal unions (Pantelides 2004; Stern 2007, 2012); thus, concerns about the consequences of early marriage should be even greater than those of early motherhood. One of the most recent analyses of teenage

fertility suggests that Mexican teenage mothers have lower educational attainment and labor force participation and a higher probability of being married (at early ages) than their peers who did not become mothers in adolescence; in the long run, possibley due to their lower educational attainment, teenage mothers are more likely to live in low-income households (Arceo-Gómez and Campos-Vázquez 2014). In addition of the obvious effect of accelerating the transition to motherhood, the same negative consequences of teenage motherhood could be expected for child marriage in Mexico. Thus, in this study, we aim to start the discussion about the interconnected causes and consequences of early family formation during the transition to adulthood. The research reviewed above provides the basis for expecting and further investigating these possible links.

In this chapter, we examine the association of early marriage and demographic markers in the transition adulthood. We focus particularly on the role of early marriage in premature childbearing and its relation to early school leaving. School enrollment is the largest protecting factor against child marriage and teenage motherhood. In addition, the timing of the transition out of formal education is not only linked to the timing of labor force entry, residential independence, union formation, and the transition to motherhood, but it is also linked to the order in which these transitions occur, the interval between any pair of them, and, moreover, the duration it takes for young women to become adults. Research in Mexico suggests that young adolescents living near or in poverty experience a compact and abrupt transition into adulthood.

We are guided by the life course perspective, which defines the life course as a multidimensional concept of interdependent careers or trajectories (school, work, and family formation). From this perspective, life trajectories in early adulthood are interrelated events that occur in different timing and sequencing to young people within a system of social and biological constrains (Elder 1985). Among the principles of the life course perspective, the principle of *timing of lives* posits that the developmental impact of a sequence in a life transition or event is contingent upon when it occurs in the person's life (Elder 1998).[3] Under this framework, pathways that involve early transitions to union formation (and early childbearing) might limit future resources by disrupting or limiting school and career attainment and, in general, the acquisition of social capital. Clearly, a premature transition into adulthood—in particular during the teenage years—matters for early adult health and socioeconomic well-being, also influencing health and socioeconomic attainment later in life.

[3] According to Elder (1998), there are four life course principles: historical time and place, timing of lives, linked or interdependent lives, and human agency.

Data and Methods

We use data from the 2014 National Survey of Demographic Dynamics (ENADID), which provides retrospective marital and fertility histories of women aged 15–54; sample size is 98,711. A subgroup of women, aged 15–34, were asked if they were currently enrolled in school and the age at leaving school for those not enrolled. This retrospective information is suitable for studying the timing of life course transitions, making it possible to estimate markers in the transition to adulthood. Given our interest in early marriage and its relation to education and motherhood, we limited our analytical sample to young women 20–34 (n = 39,489) to take advantage of the information of schooling in the second part of the analysis; for the first part, however, we further limit the sample to women 20–24 (n = 14,081) to provide an international comparative measure of child marriage. We first focus on analyzing socioeconomic and demographic differences in the prevalence of child marriage and then, on its relation to the timing of leaving school and the transition to motherhood, using the longitudinal part of the data and life table techniques.

While ENADID is the most current national representative data available for this study, it is not without limitations. Although the survey includes retrospective questions about marital, fertility, education, and life histories, the design of the survey is cross-sectional; therefore, most of the contextual variables are measured at the time of the survey. For instance, the size of the locality of residence and the socioeconomic status of the household are measures of current status and do not necessarily reflect characteristics at the time when union formation, the transition to motherhood, or the end of formal education took place. They are, however, the best approximations available to our study; but their limitations should be kept in mind when interpreting our results.

We begin our descriptive analysis showing rates of child marriage by selected demographics following strictly the definition of child marriage, i.e., the proportion of women 20–24 that married or entered consensual unions before age 18. Our measures include locality of residency (rural, urban, and metropolitan), educational attainment (primary, lower secondary, upper secondary, and postsecondary), socioeconomic status (lowest, low, medium, and high), and indigenous status indicating whether the woman speaks any indigenous languages (indigenous and not indigenous). Then we use retrospective information to provide life table estimates[4] of the proportion of women entering conjugal unions, having a first child and ending

[4] The life table is a demographic technique developed for describing and summarizing event occurrence data. It uses event histories of a given population tracking events from the beginning of time, when no event has yet occurred, to the end of data collection. All individuals are exposed to the risk of failure or event occurrence, i.e., enter the risk set, at the beginning of time, and leave the risk set at the time when the target event occurs or when data collection ends. Individuals that survive the event by the end of the observation window are considered *censored* cases. Life table estimates of the risk of event occurrence include information of failure and censored cases as both contribute, person-years of exposure to the risk of event occurrence, to the risk set. For a good introduction to life table and survival analysis see, for example, Singer and Willet (2003, Chaps. 10–15).

formal education during adolescence and early adulthood. Finally, we show the association between early marriage and motherhood.

Results

In 2014, one in every five Mexican young women 20–24 years old married before age 18. Close to 4% did so before age 15 (see Fig. 13.2). This rate has remained fairly constant for about 35 years (data not shown); Mexican women born during the first half of the 1990s report the same rate of child marriage than those born in the 1960s. Even though child marriage is more common in rural areas and among less privileged girls in terms of education or socioeconomic status, rates are still high for women living in urban areas, 23%; those with upper secondary educational level, 15%; and from the middle class, 13%. Thus, early union formation is a problem that affects almost all sectors of the Mexican population. Critical values, defined as 30% or more, are observed in rural areas, among women with elementary or lower secondary education, among the lowest quartile of socioeconomic status, and among the indigenous population. Of particular concern is the percentage for indigenous adolescents. According to our data, even today, one in ten indigenous girls will be married before their 15th birthday.

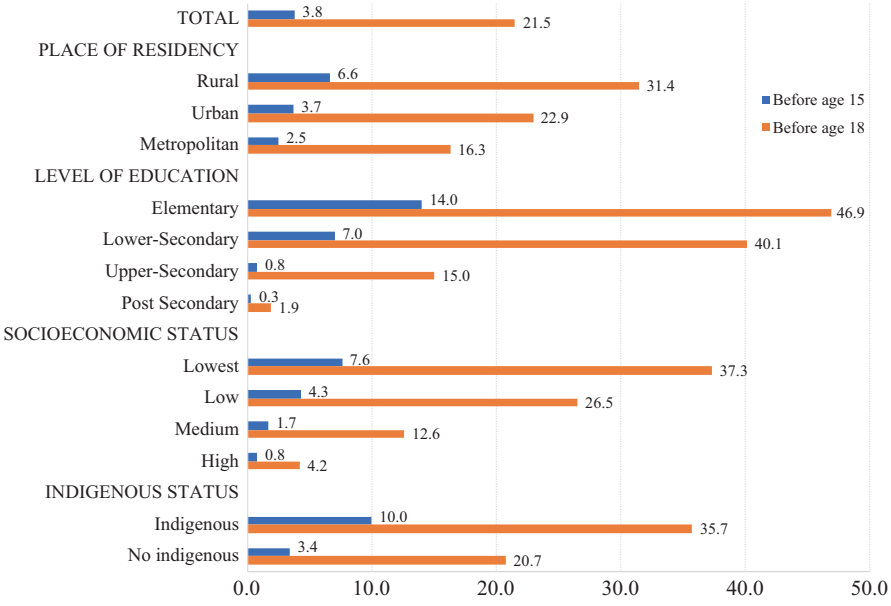

Fig. 13.2 Proportion of Mexican women 20–24 years old married or cohabiting before age 15 and 18, by selected demographics
Source: ENADID (2014). Women 20–24 years old (N = 14,081)

To what extent early marriage is related to other transitions? In Fig. 13.3 we present the life table estimates of the cumulative proportion of Mexican women experiencing our selected three markers in the transition to adulthood. It is clear that, on average, they leave formal education earlier than they enter family life. One quarter of women makes the transition out of school before they are 15 years old; 50% do so before they are 18 (the median age) and 75% at age 22. The interquartile range, or the time it takes for a cohort to complete the transition, clearly shows the inequality in educational attainment. The difference between the early and late leavers is 7 1/2 years, suggesting heterogeneity rather than standardization in this event in the transition to adulthood. Figure 13.3 suggests little coordination between the process of leaving school and child marriage; however, it gives a first idea of the strong synchronicity between entering conjugal union and having a first child.

Observing family markers in the transition to adulthood in Fig. 13.3, we see that about 25% of contemporary young women have entered marriage or cohabitation by age 17 and motherhood by age 18. This shows the increasing heterogeneity in family formation among Mexican youth. The general tendency across cohorts of Mexican women is a slight delay in the median age at each transition and a considerable delay from 6.5 to 9.4 years in the time it takes for a cohort to complete them (data not shown). Those changes, however, are driven by late starters since the proportion of women entering conjugal unions and motherhood at early ages has remained constant across Mexican cohorts.

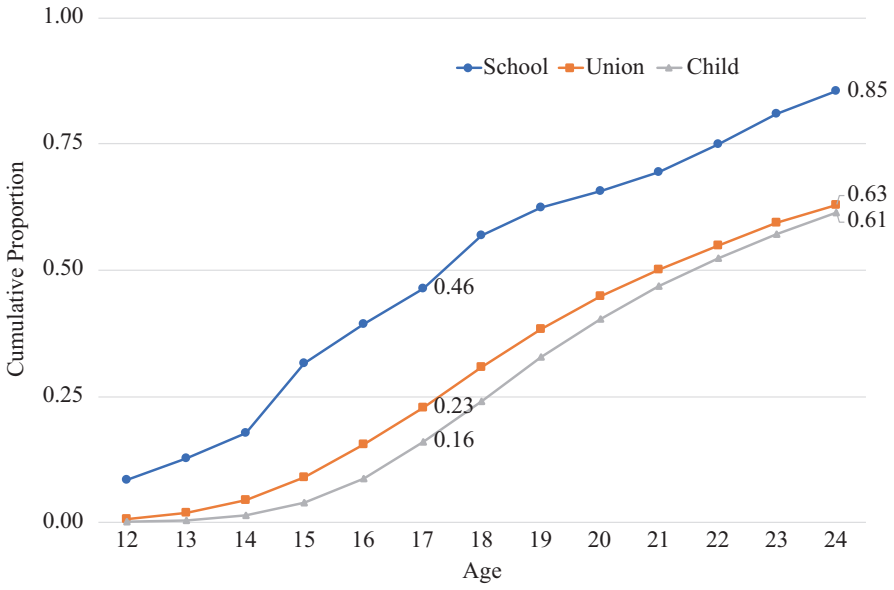

Fig. 13.3 Life table estimates of the cumulative proportion of young women finishing school, entering conjugal unions, and having a first child by age
Source: ENADID (2014). Women 20–34 years old (N = 39,489)

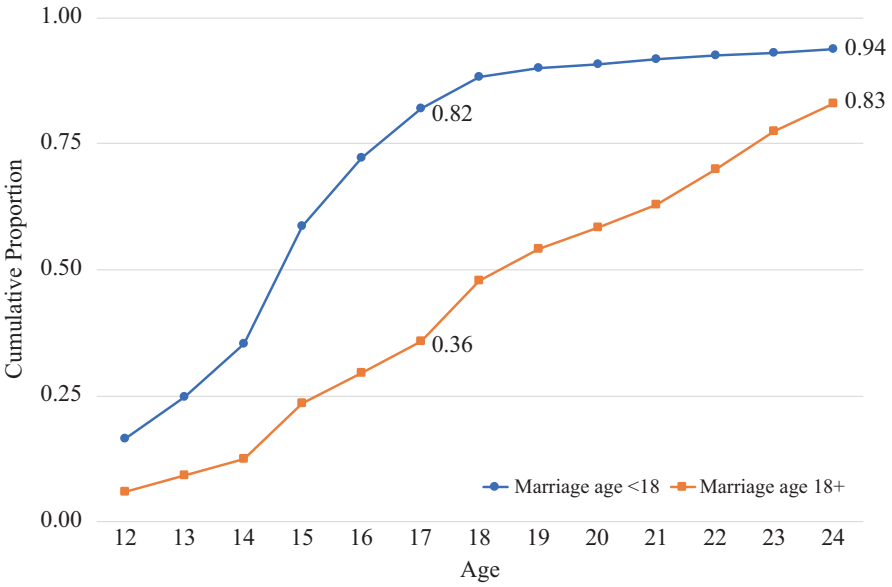

Fig. 13.4 Life table estimates of the cumulative proportion of young women ending formal education by age and marriage age
Source: ENADID (2014). Women 20–34 years old (N = 39,489)

Early Marriage, Family Formation, and Education

So far, we have described, independently, three sociodemographic markers on the transition to adulthood in Mexico. Now, without suggesting a causal relation, we aim to show the association of early marriage and the timing of leaving school and entering motherhood. Previous studies in Mexico and many other countries have noted the inhibiting effect of school enrollment on family transitions into adulthood (Blossfeld 1995; Lindstrom and Brambila-Paz 2001; Raymo 2003), some of them arguing that the role of student is not compatible with that of a wife or a mother. Accordingly, Fig. 13.4 shows that among child brides the median age of leaving school is 14.6, whereas for non-child brides it is 18.3. The difference is more dramatic if we consider that at age 16, three out of four child brides had already left school, whereas three out of four non-child brides will have left school 6 years later, at age 22. Thus, regardless of the direction of causality, the role of student seems to be incompatible with that of a wife: women that enter conjugal unions as adults spend much more of their teen and early 20 years attending school.[5]

[5] The Mexican educational system is divided into four segments: (1) primary, grades 1–6; (2) lower secondary, grades 7–9; (3) upper secondary, grades 10–12; and (4) university or college education, where the number of years required to graduate varies by the major of study. Since 2013, compulsory or mandatory education covers up to the completion of upper secondary.

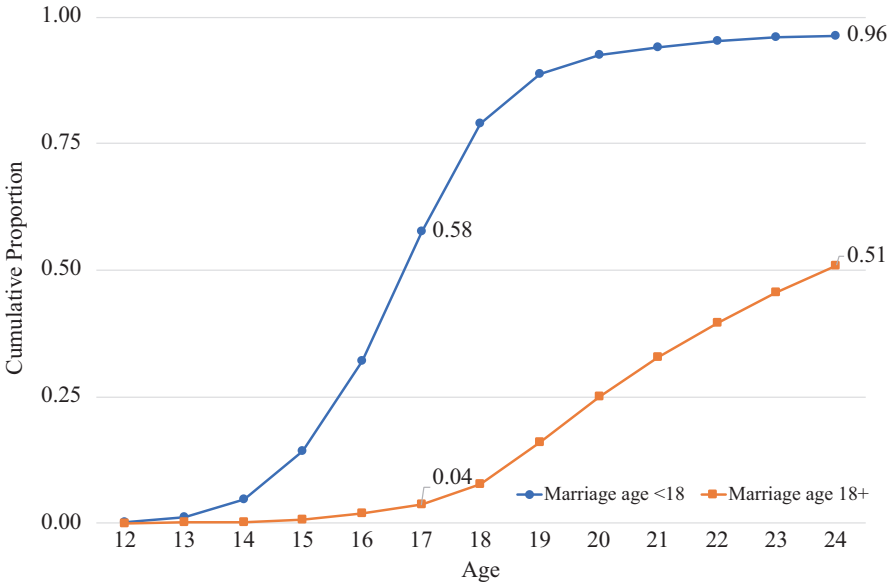

Fig. 13.5 Life table estimates of the cumulative proportion of young women becoming mothers by age and marriage age
Source: ENADID (2014). Women 20–34 years old (N = 39,489)

In regard to the transition to motherhood, clearly child brides become mothers also very early in life (see Fig. 13.5). Three out of four women that married before age 18 also gave birth to a first child before age 18 and 9 out of 10 before age 20. That is to say, almost all Mexican child brides become also child or teen mothers. At our current rates, this means that at least one in every four Mexican women is becoming a wife and mother before the end of adolescence. On the contrary, the median age at motherhood among young woman that postpone marriage until adulthood is 23.8 years; this median age is 7 years higher than that of their child-bride peers. That child marriage and teen motherhood are so closely related is an important fact that any public policy aiming to delay pregnancy and childbearing among Mexican adolescents must keep in mind. While it is arguable that early pregnancies are directly followed by an early marriage as a modern way of shotgun marriages, it is not debatable that an early marriage will be soon followed by an early pregnancy and, thus, an early transition to motherhood.

In summary, our results suggest that child marriage is a contemporary problem that young Mexican women face with clear differences by education and socioeconomic status. As a part of the transition to adulthood, an early marriage is related to an early departure from formal education and to teenage pregnancy and childbearing, thus contributing to inequalities that start early in life and continue throughout the life course.

Final Remarks

The analysis presented here gives us a scenario of paradoxes for youth in Mexico. Even though there has been a significant expansion in education that has primarily benefited women, the gains in education have been lower among recent generations, suggesting that progress beyond the almost universal expansion in primary and lower secondary education has been modest. Indeed, today's young Mexican women stay longer in school, which structures their time and daily activities during the adolescent years; however, 6 out of 10 of them leave school before the age of 18. Our results suggest that this early departure from formal education is related to an early entry into marriage or cohabitation and, in tandem, to an early entry into motherhood.

The recent increase in teenage pregnancy in Mexico has shifted the government and public attention back to sexual and reproductive rights and family planning policies targeting young women. At the core of the ENAPEA program, there is an emphasis on the importance of keeping young women attending school as preventive measure against early motherhood. There is no emphasis, however, on the direct link between teenage childbearing and child marriage. In 2014, one in every five Mexican women between the ages of 20 and 24 was married before the age of 18. Marriage before the age of 18 is a fundamental violation of human rights, but in Mexico, as in many other countries in the world, federal and state laws, at least in 8 out of 32 Mexican states, condone the practice; in this current inadequate legislative framework, parents or legal guardians can consent their daughters to get married as young as age 14. We are optimistic about the new 25 to 25 agenda for girls, boys, and adolescents, which has incorporated for the first time preventing and reducing child marriage as an ancillary target of the goal of preventing and reducing teenage pregnancy.

We have shown that the timing and the pathways taken into adulthood in Mexico often reflect uneven opportunities and inequalities associated with gender bias and socioeconomic status. Early marriage and motherhood are part of the larger trend toward rising inequality in contemporary Mexican society. Social institutions and policies targeting youth should have the potential to ameliorate social inequality and facilitate a more favorable transition to adulthood, i.e., incorporating young people successfully to adult roles of economic production and family formation. For the Mexican case, the design of such policies still requires understanding the interconnected roles that institutions, mainly school, labor market, and family system, play in the reproduction of social and gender inequalities that result in divergent pathways into adulthood.

Although gender equality and women's empowerment have advanced in recent decades and girls' access to education has improved, the rate of child marriage has been stable for several decades. The recent trends of growing teenage pregnancy and fertility on the one hand, and in cohabitation among young couples on the other, reaffirm that policies oriented to Mexican youth should take a more holistic approach to gain a successful transition to adulthood by explicitly incorporating family

formation policies to their programs. As mentioned throughout this chapter, promoting a delay in the age at first union or at first birth might help to end the circle of poverty and decrease the economic uncertainty that young adults face today. Child and early unions are not a private issue; it is a public issue that requires significant attention and social investments.

Mexico has been very active in the international agenda set by the recently defined SDGs and its targets and indicators. It has endorsed all the SDGs and has had an active role in the discussion and definition of the targets and indicators. There is a strong commitment in the discourse of the federal government to meet the goals related to gender equality and the expansion of opportunities for the youth. In addition, during the last decade, Mexico has also lived the construction of a set of institutions and normative changes targeted to attain these goals. The SDGs fit well with the broader national agenda set by the current government. As mentioned before, it is too soon to assess the effective impact of the newest programs, changes in the law, and establishment of institutions on teenage pregnancy, youth employment, and education, among others. From our perspective, there has been an initial approach to the understanding of child marriage as a problem that contributes to gender inequalities and the reproduction of the circles of poverty. However, it could be more clearly and assertively included in the development agenda. Its link to many of the dimensions covered by the SDGs (poverty, gender equality, education, decent work, eradication of gender violence, reduction of inequalities, and the promotion of the well-being of all at all ages) suggests the potential spillover benefits of eradicating child marriage in Mexico.

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Chapter 14
Improving Children's Chances: Using Evidence from Four Low- and Middle-Income Countries to Set Priorities for the Sustainable Development Goals

Jo Boyden, Andrew Dawes, and Colin Tredoux

Introduction

This chapter is based on evidence from Young Lives, a comparative, mixed-method cohort-sequential study of the causes and consequences of childhood poverty and inequality that has been following the lives of 12,000 children in Ethiopia, India (in United Andhra Pradesh), Peru and Vietnam since 2002. We draw on a range of data and analyses undertaken in the study to illustrate how influences associated with poverty and inequalities have shaped the development of mathematical and language competencies. Both abilities are necessary to thrive in the twenty-first-century society. They are associated with school completion and with opportunities to enter further education and training and to obtain more decent work (National Mathematics Advisory Panel 2008; Reschly 2010; Siegler et al. 2012). Ultimately, proficiency in these areas contributes to national productivity (OECD 2010).

Young Lives was designed initially as a means of tracing trends in child well-being during the life of the Millennium Development Goals (MDGs) and, as such, provides background for the sustainable development goals (SDGs) (United Nations 2017). To this end, this chapter seeks to illustrate how Young Lives can

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make a contribution to SDG priority setting by presenting some highlights from the research. We commence in early childhood with findings on child growth and effects on language and mathematics skills (often referred to as *cognitive* skills). We then present findings on the contribution of preschool attendance to these abilities through childhood and adolescence. Next, the relative contributions of home background and school quality to learning outcomes are explored. Finally, and using an example from Peru, we report on latent growth modelling (LGM) (Duncan and Duncan 2009; Preacher et al. 2008; Singer and Willett 2003) of developmental change in receptive vocabulary and mathematics abilities from early childhood to mid-adolescence. Policy implications are noted along the way.

Young Lives

The conceptual reference point for Young Lives is the Bronfenbrenner and Morris (2006) bioecological life course approach in which child and adolescent functioning and development is the product of complex transactions over developmental time (see also Elder and Caspi 1990). They conceptualise the "context" for human development as a system of nested and interdependent systems that operate at levels proximal to and more distal from the individual. Similarly, the SDGs provide a broad framework for improving child development and well-being through interventions directed at diverse environmental systems operating at multiple levels. In this sense, the SDG conceptualisation aligns well with Bronfenbrenner and Morris's (2006) approach.

In terms of environmental systems, the Young Lives focus is the child development and well-being outcomes of exposure to poverty and associated risks. The children in the sample fall into two age groups (4000 born around 1994 and 8000 born about 2001) and comprise roughly equal numbers of boys and girls. They are diverse in the economic status of their households; their ethnicity, religion and language; as well as their distribution among some 80 rural and urban sites across 4 countries undergoing distinctive processes of economic and infrastructural expansion and change.

Beginning with the children's early circumstances, the research examines interactions between various developmental domains, how these evolve over time and with what outcomes for boys and girls in different locations and from different economic and social groups. Particular attention is given to the factors affecting children's growth, health, cognition, learning, parent and child aspirations, agency, psychosocial well-being and their time use at different points in their lives. This holistic perspective on children's development and lives makes it possible to discern how deprivations in one area of development (e.g. growth stunting) may affect others (e.g. neurological development), with cumulative effect over time. Since the same instruments and questions are applied throughout the sample, Young Lives is able to trace the many dimensions of child development that follow common and relatively predictable patterns across country contexts, whether these are driven by

universal biological growth mechanisms or by culturally shaped regularities in a progressively more globalised world.

Young Lives has conducted five rounds of household-based surveys with the children, their caregivers and community representatives, starting in 2002. Attrition has been extremely low. The overall rate across the five rounds was 4.5% for the younger cohort and 10.7% for the older chort. At each survey round, a wide range of information has been gathered on the children, caregivers, households and communities. Basic data on the siblings of younger cohort children enables analysis of intra-household differences associated with gender, birth order and sibling composition.

Recognising that poverty has many dimensions, it is conceptualised as a level of material and social resources and service access that is insufficient to ensure healthy development and well-being and effective participation in society. Household economic and social status is taken to be one of the chief indicators of child poverty (Dornan and Boyden 2011; Young Lives 2003).The holistic nature of the data makes it possible to explore interactions between domains and the cumulative effect over time of developmental risks experienced in early life.

Various indicators of child poverty are deployed in the literature (Dercon 2012; Humphries et al. 2015). For this contribution, we use the Young Lives wealth index (Briones 2017), which is a composite of three indicators: ownership of consumer durables, access to basic services such as water and electricity and housing conditions. The index is used both as a continuous variable (values from 0 to 1.00) and also to categorise households into three broad wealth categories, with those in the bottom tercile identified as "poor". In the vast majority of cases, Young Lives caregivers are the child's mothers. Data on caregivers is sometimes combined with household-level indicators to provide a more complete picture of determinants of child poverty and thus likely predictors of child outcomes. Caregiver information includes levels of health, education, social connections, ethnicity, mother tongue, emotional and psychological well-being and also perceptions, attitudes and aspirations for the child and the family. Community questionnaires provide information about the social, economic and environmental context of each community, including infrastructure and services.

Following the emergence of evidence about the poor quality of education in the four countries, school effectiveness surveys were launched in 2010 in selected schools attended by Young Lives children and their peers. Primary school surveys were undertaken during 2011–2013 and those in secondary schools in 2016–2017. These surveys investigate how structural and process features of schooling relate to education effectiveness (assessed in terms of pupil progress) and show how education policies impact school quality and performance. Together, these multiple data sets make it possible to build a good picture of the pathways through which poverty and inequality are transmitted across the life course and between generations, providing vital lessons for policy.

The Young Lives design has limitations. As it is a surveillance study focused on child poverty, the sample is not representative of children in the countries studied. More pertinent to this chapter is the frequency of data gathering in the first 2 years

of life. The first time of measurement was when the children were on average 12 months old. Ideally, monitoring should begin with maternal lifelong health and foetal development shortly after conception, with information on infant growth and circumstances gathered from birth and frequently thereafter. But to undertake detailed monitoring of foetal and infant development across 80 dispersed sites in four countries with limited infrastructure would have been extremely difficult logistically and because of high rates of infant mortality building the research on a birth cohort would have required a far larger sample, making the study too expensive. Consequently, monitoring began when the younger cohort had already reached about 1 year of age, and again, for reasons of cost, subsequent data rounds were gathered between 3 and 4 years apart.

Young Lives Contribution to Developmental Science and the SDGs

Developmental science that draws on longitudinal cohort data provides an important opportunity to explore in depth and over time the developmental outcomes for children exposed to multiple deprivations and stressors. Longitudinal studies also permit insight into factors that enable children to thrive despite the odds. We refer to Bronfenbrenner and Evans (2000, p. 117) formulation. For them developmental science is characterised by:

> The systematic study of the conditions and processes producing continuity and change over time in the biopsychological characteristics of human beings – be it over the life course, across successive generations, retrospectively through historical time, or prospectively in terms of implications for the course of human development in the future.

The Young Lives study design is very much in accord with this approach. It is however important to say that while the study was launched at a time when ideas about the nature of developmental science were much debated (e.g. Lerner et al. 2000; Magnusson and Cairns 1996), it was not originally driven by questions occupying developmental scientists so much as an intention to understand "the drivers and impacts of child poverty in low- and middle-income countries" in the years following the declaration of the MDGs (Morrow and Dornan 2015, p. 1). The contributions of health professionals and economists were prominent in the early years of the study. That said, it has of course considerable relevance to the field and is now a multidisciplinary endeavour that brings social scientists together with health professionals, influencing the choice of questions and measures.

Perhaps it is in its applied policy-relevant genre that the alignment with Developmental Science is most apparent. As Lerner et al. (2000, p. 11) observe, Applied Developmental Science "has become a key intellectual tool for scholars concerned with using their research to address issues of moment to people outside the academy". As a study that seeks to advance knowledge of the causes and consequences of poverty for children while constructing an evidence base for policy

intervention, Young Lives is an example of just such an orientation. Much of the research on mathematics and literacy skills is derived from wealthy countries. Young Lives provides evidence from low- and middle-income countries (LMICs) that particularly require support and interventions to attain the SDGs.

Though Young Lives was initiated at the commencement of the MDGs, its evidence is perhaps more pertinent for the SDGs. Unlike the MDGs, which were concerned with national averages in child well-being, data disaggregation is key to the SDGs. This facilitates the identification of disparities between different groups of children based on wealth, area of habitation, gender and other social determinants, also a primary objective of the study. This presents a huge opportunity for ensuring that no children are left behind in policy and intervention on account of economic disadvantage and other impediments. Evidence from longitudinal observational studies can be particularly helpful in priority setting and facilitating improvement of country performance (Dornan 2017; Raikes et al. 2017) in line with the SDGs, making it possible to explain what determines which outcomes in which children and why and also highlighting the mediating and moderating factors along the way.

All SDGs are relevant for children's development, but for improving learning outcomes, evidence suggests the particular importance of supporting child health, nutrition, social engagement and cognition. This entails measures to reinforce promotive and protective influences proximal to the child, which in early and middle childhood in particular implies a focus on the home, preschool and school environments, though always with attention to community-level infrastructure and services. Within this broad ecological framework, the SDGs of greatest relevance are as follows: 1 (end poverty), 2 (end hunger and improve nutrition), 3 (promote health and well-being), 4 (provide equitable and quality education), 5 (ensure gender equality) and 6 (provide access to water and sanitation).

Young Lives Findings: Growth Stunting, Recovery, Faltering and Learning Outcomes

Growth stunting is a significant problem in LMICs, due to a complex mix of factors, most commonly chronic or long-term undernutrition, poor living conditions and lack of quality water, sanitation and health-care services (Black et al. 2013). There is uniformity in the more distal determinants of such conditions across the four Young Lives countries. Poverty, rural location, repeated exposure to environmental and other hazards and belonging to an ethnic/language minority or low-caste group are consistently found to be key drivers of disadvantage and associated with children doing less well in a number of outcomes, including growth.

The poorest children in the study are at greatest risk for undernutrition and growth stunting. This is illustrated in Fig. 14.1 using an example from United Andhra Pradesh, India. It is striking that stunting rates rise in all groups to age 5 and then fall towards adolescence. However, the risk of early and continued stunting at

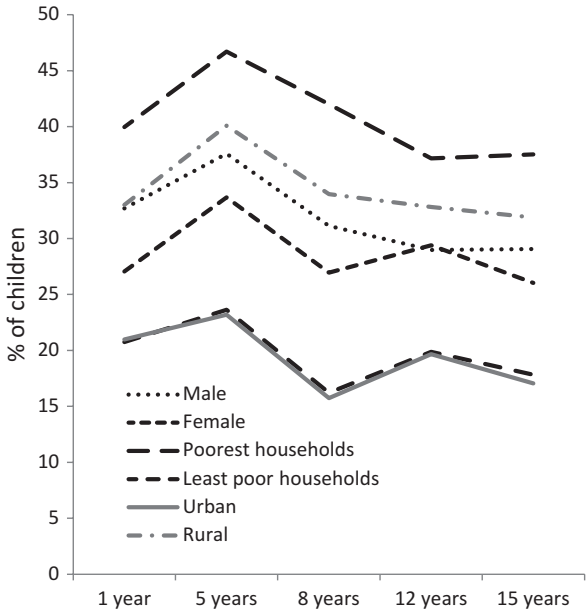

Fig. 14.1 Stunting rates by age and group, United Andhra Pradesh

age 15 (at levels close to 40%) is highest in the poorest tercile and for those living in rural areas (32%). The peak at age 5 probably indicates the effects of poorer nutrition following cessation or reduction of breastfeeding and health conditions such as diarrhoeal disease particularly in areas with poor sanitation. In the case of girls, a rise in proportions experiencing stunting around age 12 is most likely associated with gender norms favouring boys and a resulting pro-boy gap in dietary diversity (Aurino 2016; Aurino et al. 2016).

A wide body of literature reports associations between children's early growth status and their performance in school (Glewwe and King 2001). The first 1000 days of life following conception is accepted as a critical period for ensuring good health, nutrition, stimulation and a sound foundation for later development. Young children in families affected by poverty, food insecurity and poor sanitation are particularly at risk for poor health and growth stunting, which impacts neurocognitive development and compromises learning (Black et al. 2013; Fewtrell et al. 2005; Walker et al. 2007). This is confirmed in Young Lives, where, for example, children from Peru, who were stunted between 6 and 18 months, had lower scores on receptive vocabulary, as measured by the Peabody Picture Vocabulary Test (PPVT, a cognitive development proxy), at age 5 compared to children whose initial height was within the normal range (Sanchez 2009).

Indications from a significant body of research are that the likelihood of reversing these effects in later years is limited (Victora et al. 2010). As Walker et al. (2007) report, the impact of chronic undernutrition in early childhood on cognitive functioning (including low IQ) is evident through 18 years of age. However, as Fig. 14.1 illustrates, despite the lasting effect of early deprivations in many children, Young

Lives data show significant plasticity in growth beyond the first 1000 days (Crookston et al. 2013; Schott et al. 2013). Georgiadis (2017) notes the scarcity of evidence on the relative impact of growth status at different points in childhood on later cognitive development. Young Lives repeated surveys permit close examination of whether the impact of early stunting on cognitive functioning persists in those who recovered from stunting at later points in childhood.

Crookston and colleagues examined the relationship between Young Lives children's growth status at different ages and their performance on tests of reading comprehension, receptive vocabulary (PPVT) and mathematics. They compared children whose growth was never stunted with those who were persistently stunted between 1 and 8 years, those stunted at 1 but had recovered by 8 years and those whose growth faltered between 1 year (when their height for age was normal) and 8 (when they were stunted). They found that children whose growth recovered between 1 and 8 years had better outcomes than those who remained stunted. Their test scores for receptive vocabulary and mathematics were not different from children who had never been stunted or who had faltered.

Georgiadis (2017) has taken this work further to examine outcomes at 15 years. He found that the consequences of undernutrition in early childhood are not irreversible if parents make investments in improved nutrition later in childhood. He concludes: "Overall, the evidence suggests that nutrition-promoting interventions that start early in life and continue to subsequent stages of childhood, combined with support in other areas such as cognitive stimulation and parental involvement, may hold the most promise for the promotion of child development" (Georgiadis 2017, p. 5).

We have noted that one of the most significant risks for growth stunting is poor sanitation. Young Lives data show that stunting is less likely in children whose households have access to improved sanitation (Dearden et al. 2017a, b). Furthermore, household access to improved water and sanitation at age 1 was associated with higher receptive vocabulary scores at 5 and 8 years of age (Dearden et al. 2017a, b). Similarly, Georgiadis et al. (2017) find that growth recovery after early childhood is linked to improvements in the household and community environments and in turn to improvements in children's receptive vocabulary by age 12.

These findings have important implications for policy. Thus, under SDG Goal 2, one of the targets is to end growth stunting in children under 5. That is an important and necessary objective. However, nutritional shocks in middle childhood and beyond can result in growth faltering. As Georgiadis (2017) points out, this calls for sustained nutritional and other protections beyond 5 years of age. Finally, the findings of Dearden and Georgiadis and their colleagues (2017b) on links between growth stunting and inadequate household services have clear relevance to SDG 6. Improved water and sanitation and hygiene services (WASH) must accompany nutritional support in early childhood. Without WASH, nutritional interventions may be undermined by infections. Interventions that combine nutritional support and early stimulation are also indicated (Grantham-McGregor et al. 1991; Yousafzai et al. 2014).

Young Lives Findings: The Importance of Scaling Preschool Quality to Realise the SDGs

SDG Goal 4 is to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all". For the preschool period, the target is: "By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education" (Raikes et al. 2017). An extensive literature on the positive impacts of early learning programmes (ELPS) on children's readiness to learn in school is available. Most is derived from North America and Europe, where high-quality programmes have shown short- and long-term positive effects on both learning outcomes and socio-emotional development (e.g. Camilli et al. 2010; Barnett 1998). Evidence from the global south is increasingly available showing school-readiness benefits to children of preschool attendance (e.g. Rao et al. 2012; Nores and Barnett 2010; Mwaura et al. 2008; Aboud 2006). It is widely agreed that programme quality is necessary to promoting readiness (Biersteker et al. 2016; Hoadley 2013). There is very limited literature in LMICs on long-term impacts through late adolescence and adulthood. However, there is evidence that (quality) preschool education in LMICs advantages the scholastic performance of children, with effect sizes generally larger for short-term benefits (Nores and Barnett 2010). There is a need for further studies of long-term outcomes.

Young Lives has examined the effects of children's preschool participation, measured between ages 3 and 5 years. There are no measures of dosage (attendance) or quality. Preschool participation in the younger cohort and in each country in 2006 is presented in Table 14.1.

While participation rates are greater than 80 percent in Peru, India and Vietnam, three quarters of the sample in Ethiopia have had no preschool exposure. Publicly funded programmes predominated in all the countries except Ethiopia in 2006. Since these data were collected, Ethiopia has been making significant efforts to extend provision particularly through the O Class kindergartens attached to public schools (Woodhead et al. 2017). Unsurprisingly, wealthier children generally participate in the private preschool system in all countries.

Table 14.1 Preschool participation by country and type of preschool provision in 2006

	Type of provision			
Country	Never participated N (%)	Private N (%)	Public N (%)	Community N (%)
Ethiopia (N = 1911)	1436 (75%)[a]	337 (18%)	60 (3%)	78 (4%)
India (N = 1950)	255 (12%)	523 (27%)	1167 (60%)	5 (0.26%)
Peru (N = 1933)	208 (11%)	212 (11)%	1203 (62%)	315(16%)
Vietnam (N = 1967)	184 (9)%	184 (9%)	1540 (78%)	59 (3%)

Source: We are grateful to Marta Favara for this analysis
[a]All percentages rounded

Across the Young Lives countries, the opportunity to participate in a preschool programme is shown to have benefits on language development (although comparisons across countries are not valid as the psychometric properties of the PPVT test differ). For example (and controlling for social and economic status (SES)), urban children in Ethiopia who attended mainly private preschools scored significantly higher on receptive vocabulary (PPVT) at 5 years of age than those who did not participate (Woldehanna 2011). In the long term, those who participated in preschool were close to 26% more likely to have completed Grade 10 (Woldehanna and Araya 2017).

Early mathematics skills are strongly predictive of later school success – more so than language ability (Duncan et al. 2007; Siegler et al. 2012)— and differences in SES remain stable across age. Those who perform well in early grades continue to stay ahead. The relationship between preschool exposure and mathematics scores in later years has been explored in the younger of the two Young Lives cohorts. There is considerable variation across the countries. The effect of preschool on mathematics skills at 8 and 12 years is evident in Ethiopia, India and Peru where those who had received private preschool education (probably of better quality) are performing best (Singh and Mukherjee 2016). Preschool attendance in public institutions is almost universal in Vietnam. By age 8, there is no association between attendance and numeracy skills in Vietnam, and overall, Vietnamese children outperform their peers in the other countries.[1]

Generally, preschool participation advantages children's performance in tests of language and mathematics, although tends to be stronger for the latter (Singh and Mukherjee 2016). For the mathematics, the effects hold through to age 12 years, although the results differ across countries. Private preschool attendance further advantages young children in both areas. While we cannot be sure, this is likely to be a function of better quality provision. Indications are that apart from Vietnam, publicly funded preschools are of limited, to poor, quality. Children in public programmes do not necessarily do better than children who have not participated at all.

One implication of these findings from LMICs for SDG 4.2 is that while preschool access does have positive effects, at least in the primary school years, without scaling-up quality, access alone is not likely to produce significant advantage to children throughout their school career.

Learning outcomes such as language and mathematics skills are shaped by both home background and schooling. Each exerts influence at different points in the life cycle. In their analysis of the National Longitudinal Survey of Youth, 1979 (CNLSY/79) data set, Cunha and Heckman (2008) show that in the USA, parental influences are strongest between 6 and 7 years of age, though "the effects of (parental) investment in later periods are substantial" (p. 776). Studies conducted over many years in the global north have revealed that the quality of support for learning in the home is moderated by SES, with the effects on children's outcomes being mediated through proximal interactions of caregivers with their children. Learning

[1] Unlike the test of receptive vocabulary, mathematics items were the same across the four countries. This makes country comparisons possible (Cueto and Leon 2012).

outcomes and school progress are, on average, better among children from higher-income households than those from poor backgrounds (e.g. Duncan et al. 2007; Mercy and Steelman 1982).

In terms of Young Lives findings, household material wealth and living standards are also found to be associated with a child's skill acquisition and subjective well-being (Dercon and Krishnan 2009). Caregiver characteristics are positively associated with a student's academic performance and outcomes. For example, parental care has been found to impact on children's health in India, which in turn impacts on their cognitive abilities (Helmers and Patnam 2011). Furthermore, educated parents are more likely to send their children to school, to report higher aspirations for their children and to invest more in their children's education (Dercon and Krishnan 2009).

Schooling makes an increasingly important contribution to learning of language and numeracy skills through middle childhood and adolescence. During the MDG period, education access improved significantly in LMICs, especially at the primary level. Nevertheless, SDG 4 recognises that participation is not enough to boost skills — high-quality education from the preschool level is key to improving children's development outcomes in LMICs. That said, the measurement of quality is debated. In a review of studies of the effects of school quality on learning outcomes in LMICs, Glewwe et al. (2011) conclude that our knowledge of what makes a difference is limited—in part because of what is and what is not measured in the different studies (see also Glewwe and Kremer 2006). Among other variables, there is broad agreement that particular attention needs to be paid to the organisation of the educational environment and to the learning process in the classroom. Rolleston and James (2011, p. 3) note that: "the development of young people's cognitive and non-cognitive skills occurs through a complex set of mechanisms among which school education is one". Furthermore, literacy and numeracy skills form a foundation "for the development of more complex cognitive skills such as information technology skills and problem-solving abilities" (p. 3).

Krutikova et al. (2014) illustrate the contribution of Young Lives to our understanding of the relative influences of school and home on school performance. They use data from 548 Peruvian and 1131 Vietnamese children to examine links between home background factors and a summary measure of school quality on mathematical ability at age 11 years, controlling for home background and maths and receptive vocabulary skills at age 5. In Peru, they found that school quality-related differences constitute as much as 78% of the achievement gap in mathematics across socio-economic groups. In addition, poorer children were selected into poorer quality schools, and these then compounded the deficits evident in their home backgrounds.

Inequitable provision for poor children and minority groups is common in both high-income countries and LMICs. Vietnam provides an exception where the policy on primary education in disadvantaged communities has sought to strengthen educational quality in low-income and minority communities. Krutikova and her colleagues found that school quality did not vary for children from different socio-economic backgrounds in Vietnam and, most striking, attainment gaps between

poorer and better-off children actually *narrowed* during the course of the school year. Vietnamese schools were equally effective in teaching mathematics to children from poor and minority backgrounds. This demonstrates the potential moderating influence of effective school provision on inequalities in educational achievement, providing significant lessons for policies designed to reach SDG 4 (inclusive quality education). Krutikova and her colleagues show that across the Young Lives countries, the compensatory benefits of schooling for the poorest and most marginalised children depend on the quality of provision.

Rolleston and James (2014) study predictors of mathematical (numeracy) and literacy skills at ages 8, 12 and 15 in Ethiopia, India and Vietnam. Predictors for numeracy at each age include, for the child, gender, age, majority group membership ("other castes" in India only), height-for-age Z scores, years of schooling and numeracy (from age 12 years). Household-level predictors include caregiver literacy and the Young Lives wealth index. The outcomes are age- and school grade-appropriate measures of numeracy. The same variables are used for predictors of literacy (excepting numeracy). Tests of reading and writing ability were conducted at age 8, and the PPVT was used at ages 12 and 15 as a "post-literacy" proxy for cognitive development.

The findings are complex, and there is some variation across the study sites. However, they indicate that overall literacy and numeracy skills are predicted by early advantages in household wealth, caregiver literacy and normal growth (height-for-age). Similar to Cunha and Heckman's (2008) work on US data, the findings show the contributions of both home and school. Earlier proficiencies in numeracy and literacy (which is associated with caregiver education levels), together with years in school, are key predictors of literacy and numeracy at 12 and 15 years of age.

Tracing Language Trajectories in Peru

The evidence we have presented so far corroborates findings from the wider development science literature making clear that diverse ecological systems have very different influences on the learning of children in distinctive socio-economic groups during different periods in their development. This highlights the potential for longitudinal research to help determine SDG investment priorities in accordance with specific needs across early, mid- and later childhood. Thus, the longitudinal Young Lives design and large sample size permit exploration of a key question: *how and at what points in the life course do poverty and associated risks shape adolescents' developing capabilities?* This question has been explored in relation to the development of mathematics and language abilities in the younger cohort by Tredoux and Dawes (2018) in all four countries using latent growth modelling (LGM) (Duncan and Duncan 2009). The findings are remarkably consistent across the countries, providing a strong basis for policy recommendations.

Here we present analysis of predictors of growth in receptive vocabulary and reading comprehension for the younger chort in Peru. The model tracks change in receptive vocabulary over ages 5–15 years, revealing individual differences in outcomes at age 5 and in trajectories up to age 15 and allowing exploration of whether these are conditional on the predictors. Receptive vocabulary was measured at 5, 8, 12 and 15 years using the Peabody Picture Vocabulary Test Spanish version (PPVT-R) (Dunn et al. 1986). The influence of receptive vocabulary growth on reading comprehension at 15 was examined. The latter was measured with an instrument based on international test items and comprises reading tasks designed to measure literacy at basic, intermediate and advanced levels. The outcomes of interest, namely, skills at age 15, are associated with later educational performance (Behrman et al. 2006) and life opportunities, with each additional year of education in LMICs adding about 11 per cent to a person's earnings (Psacharopoulos and Patrinos 2004). Understanding sources of influence on these skills has implications for interventions from early childhood through later phases. Predictor and outcome variables are presented in Table 14.2.

In LGM, a theoretical model of the expected relationships between the predictor and outcome variables is developed. Thereafter the data are analysed and an empirical model is reported (Collins 2006). In the interests of brevity, we present only the empirical model, or findings, in Fig. 14.2. Black lines indicate positive relationships and red negative. Line thickness reflects strength of relationship. Arrows indicate direction, ellipsoids represent latent variables, and rectangles manifest variables. Model fit indices at the bottom of the figure indicate the extent to which the empirical model matches the expected pattern for the theoretical model. In this case, fit is moderately good (Hu and Bentler 1999).

The model tells us that proximal influences in early childhood are particularly powerful, with those emanating from maternal education and early economic well-being intermeshed. The former influences receptive vocabulary at age 5, growth in receptive vocabulary over time and reading comprehension at 15, through its relationship with preschool participation (likely associated with better quality provision) and early reading skills. In other words, children with better-educated mothers are more likely to attend better preschools, which benefits their language over time. The effect of children's economic situation on expanding receptive vocabulary is mediated by the time they spend doing household chores and other tasks, studying or attending school in middle childhood and later. Poorer children spend more time on domestic responsibilities, reducing time for studies, in turn affecting language skill development. Vocabulary growth by age 15 predicts reading comprehension at this age.

Findings from the LGM analysis in Peru reinforce the evidence that poorer children are also more at risk for growth stunting, which impacts both early receptive vocabulary and its development over time. Further, as established in other studies, women in poorer households are at greater risk for anxiety and depression (Lund et al. 2010), and these strains likely compromise child care (Wachs et al. 2009). The analysis shows that compromised psychological well-being increases the probability of growth stunting in their infants, and that in turn compromises language development.

Table 14.2 Variables included in the models for predicting reading comprehension at 15 years of age, as well as for conditioning latent growth in receptive vocabulary and latent growth in Mathematics skills between 8 and 15 years

Predictor variables
Early childhood economic well-being: Young Lives wealth index values at 12 months and 5 years were aggregated. Higher values reflect higher household wealth
Maternal education at 12 months: total years of education (school and post school)
Hours for school and study (8, 12 and 15 years): total hours per day the child reports as being spent at school plus hours per day spent studying after school (averaged over rounds 3, 4 and 5 per child) Hours for household chores and tasks (8, 12 and 15 years): total hours per day the child reports as being spent on caring for others and doing household chores (e.g. cleaning, fetching water) and household tasks (e.g. assisting on the family plot). Total hours for all three are averaged over rounds 3, 4 and 5 per child
Preschool participation (5 years): scaling by preschool type, with higher scores for what is likely to be better provision, based on other Young Lives findings— No preschool = 0, Public PRONOEI = 01, Public Centro Educativo Inicial (CEI) Público (Public Jardine) = 02, private centre-based CEI = 3
Maternal mental Health (Round 1): self-reporting questionnaire (SRQ20) (World Health Organisation, 1994) (Round 1). A high score indicates risk of common mental disorder (anxiety and depression). In the model, the scale was reversed for ease of interpretation. The SRQ20 has established reliability and validity at acceptable levels in many developing countries including Peru (e.g. Bennett et al. 2015)
Early growth stunting (12 months and 5 years): each child is given a score based on their growth status[a] at each age—normal height for age = 0, stunted = 1, severely stunted = 2.). Scores at age 1 year and age 5 years were aggregated; the early growth stunting score had range 0–4
Substance use and anti-social behaviour (age 15): following exploratory factor analysis and consideration of question origin and content, two factors were constructed from Young Lives self-administered items at age 15. Substance use, internal consistency omega = 0.72; anti-social behaviour, internal consistency omega = 0.60
Adolescent self-efficacy (15 years): five Young Lives *Agency* items. The predictor was eliminated during preliminary model fitting as it had no predictive value and internal consistency was poor
Early quantitative skills (age 8): cognitive development assessment (CDA)—Quantity Concepts (15 items) (Cueto et al. 2009)
Emotional well-being (age 15): five items from the strengths and difficulties questionnaire (Goodman 1997)
Chronologically latest outcome variable
Reading comprehension (Round 5): reading comprehension test raw score at 15 years. The test has five sets of items drawn from publicly available international tests (including PISA) that assess basic to advanced literacy (see Tredoux and Dawes 2018)
Latent growth variable
Latent growth in receptive vocabulary: measured at 5, 8, 12 and 15 years, PPVT-R (Dunn et al. 1986)

[a]Stunting, HAZ>2 standard deviations below the median of the reference population; severe stunting, HAZ >3 standard deviations below the median of the reference population

Notes

1: The latent growth curve was constituted by a latent variable representing the intercept and a latent variable representing slope/change. Both were modelled as varying randomly across individual children

2: Child age was controlled by entering it as an exogenous variable with a directional effect on the latent variable representing the intercept component of the latent growth curve. We do not show child age in any of the model diagrams, as it is a control rather than substantive element

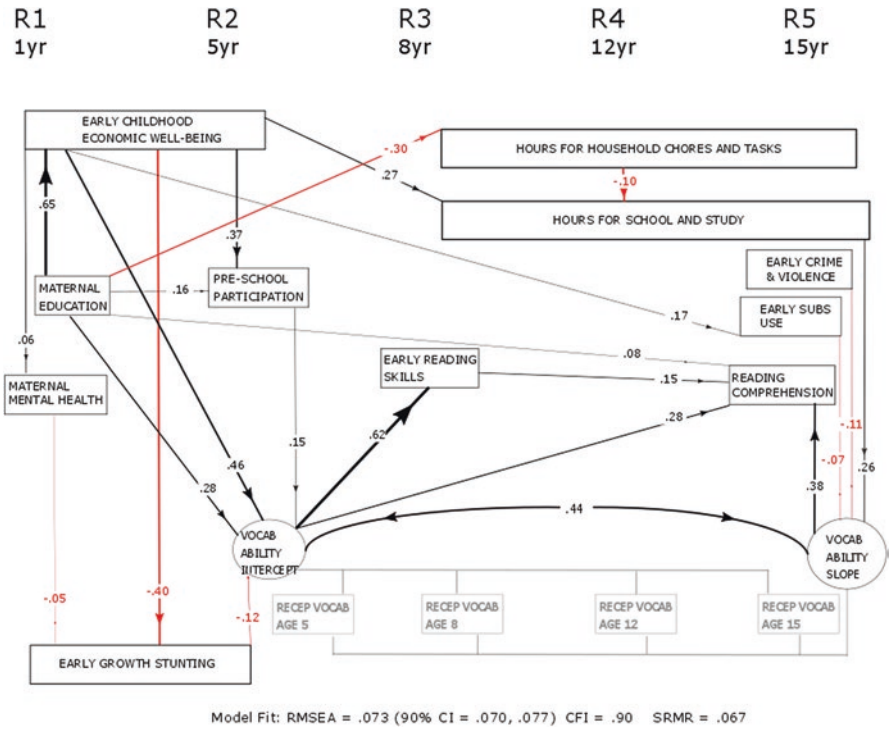

Fig. 14.2 Influences on the development of receptive vocabulary and reading from 5 to 15 years in Peru (Color figure online)

Finally, adolescents' emotional well-being did not emerge as a predictor, but those who reported involvement in crime, violence and substance use had lower levels of growth in receptive vocabulary, depressing their reading comprehension scores. Reasons for adolescent's involvement in these behaviours are likely to be complex, with home environment one factor. In their examination of risk behaviours in the Peru older cohort, Favara and Sanchez (2017) found that urban adolescent boys in single-parent households were more likely to exhibit these behaviours and that higher self-esteem is protective against their involvement. These findings indicate the importance of school-based interventions in adolescence, both to provide academic support to students who are struggling and to prevent those at risk from becoming involved in activities likely to undermine their educational progress.

Conclusion

We have examined evidence concerning the development of literacy and numeracy skills from early childhood into adolescence in four LMICs, focusing primarily on environmental systems proximal to the child while also indicating the fundamental

influence of more distal factors. The SDG framework is an effective tool for identifying entry points and priorities for policies addressing the multiplicity of interacting factors influencing children's learning trajectories at different levels. We have proposed that the goals most relevant for strengthening children's literacy and numeracy skills are those addressing poverty (SDG Goal 1), 2 (end hunger and improve nutrition), 3 (promote health and well-being), 4 (provide equitable and quality education from the preschool period onwards), 5 (ensure gender equality) and 6 (provide improvements in household access to water and sanitation).

Findings point to the importance of addressing proximal risks in the home occasioned by poverty. Clearly extending and upgrading the quality of critical services such as WASH, particularly in rural areas, are vital. It may be necessary to build conditions into social protection measures such as cash transfers and employment guarantee schemes to provide a safety net for households with young children. The study reinforces observations derived mainly from developed regions on the importance of the early years as the foundation for later health and development, including key competencies such as language and numeracy skills. Further, the evidence of learning gains associated with recovery in growth following early-life stunting suggests the need for sustained support beyond the first thousand days. The centrality of care and stimulation by parents is underlined and the psychological well-being of women recognised as key. As observed by others (Wachs et al. 2009), psychosocial provision for vulnerable mothers during their infants' first months of life is likely to reduce a range of risks to early development and improve the chances of better learning outcomes through childhood and adolescence.

In middle childhood and adolescence, protection is necessary from threats to the development of skills that are so important for school and later. Such protections must involve strengthening schools, with further work necessary to identify critical elements of preschool and formal school quality in LMICs. That said, and particularly for poor children and those from minority groups, significantly scaling up access to better opportunities to learn so as to enhance key competencies and school completion will likely reduce the probability of intergenerational transfer of low educational outcomes, also increasing opportunities. Assistance with learning in the home is also key.

While recognising the important contributions children make to the domestic sphere, the Peruvian example highlights the need to reduce demands on children that compromise their study time, also pointing to the overarching power of household wealth for learning outcomes in adolescence and in turn influencing the chances of completing school, entering further education and training and finding decent work. Lastly, in early adolescence, attention to risks for involvement in anti-social behaviour and substance use is equally important. These may be both a cause and an outcome of poor learning.

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Chapter 15
Preventing Child Maltreatment in Low- and Middle-Income Countries: Parenting for Lifelong Health in the Philippines

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The United Nations 2030 Agenda for Sustainable Development has identified 17 goals and 169 targets to promote and sustain social and economic development across the globe. Violence prevention is a major part of this global agenda, given the substantial costs that violence engenders to individual and societal development. The following targets defined in the Sustainable Development Goals (SDGs) are directly related to violence prevention: eliminate all forms of violence against women and girls (target 5.2); significantly reduce all forms of violence and related death rates everywhere (16.1); and end abuse, exploitation, trafficking, and all forms of violence against children (16.2) (Global Partnership to End Violence Against Children n.d.).

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This chapter focuses on violence against children and its prevention in low- and middle-income countries (LMICs) such as the Philippines. Violence against children or child maltreatment is defined by the World Health Organization (WHO) as all forms of physical and emotional harm, abuse, neglect, and exploitation that are detrimental to a child's health, development, or dignity (WHO 2002). In particular, the work described here concentrates on child maltreatment that is carried out by adult caregivers or parents. Immediate family members are among the most common perpetrators of violence toward children: for instance, a 2010 United Nations Children's Fund (UNICEF) survey of child discipline practices in 33 LMICs indicates that 3 out of 4 children experience violent psychological and physical discipline at home (UNICEF 2013). In a national survey in the Philippines, 60% of child-reported physical violence, and 38% of psychological violence, was perpetrated by family members (Council for the Welfare of Children and UNICEF Philippines 2016). Thus, parenting interventions are a particular strategy in systematic efforts to reduce child maltreatment. This paper describes the Parenting for Lifelong Health (PLH)-Philippines study as an example of an initiative to adapt and test an evidence-informed parenting program in a low-resource context.

Throughout the chapter, the contributions and challenges of developmental science in meeting the SDG targets for violence prevention are highlighted. Developmental scientists have made significant progress in generating knowledge of the parenting behaviors and processes that are associated with positive and negative child outcomes and the distal and proximal factors that shape competent and at-risk parenting. Extending this basic research to practice, developmental scientists have likewise developed, tested, and adapted parenting intervention programs with evidence of effectively decreasing the risk for child maltreatment in different contexts (see Teti et al. 2017). The realization of the Sustainable Development Agenda, however, requires a more culturally and contextually grounded developmental science that extends the reach of its research and applications to LMIC contexts and which engages communities, governments, and other stakeholders (Raikes et al. 2017).

Human and Financial Costs of Child Maltreatment in LMICs

Violence is a global public health problem experienced by three-fourths or over one billion of the world's children. Roughly 60% of children in developing countries and 44% in developed countries have been exposed to physical, emotional, or sexual violence, bullying, or community violence (Hillis et al. 2016). In general, LMIC populations are disproportionately affected. Evidence indicates that 75% of children between the ages of 2 and 14 years in LMICs experience some form of child maltreatment at home (UNICEF 2013), with acceptance of corporal punishment a major risk factor for abuse (Stith et al. 2009). This is particularly alarming since corporal punishment is often considered normative by caregivers in LMICs (Lansford and Deater-Deckard 2012).

The consequences of child maltreatment are well-documented in the developmental science literature. The risk for physical injuries and disabilities is proximal outcomes; in the longer term and through to adulthood, poor mental health (i.e., depression, anxiety, self-harm, and suicide ideation), aggressive and antisocial behaviors, and health risks, such as substance abuse and unhealthy sexual practices, have been reported (Dunne et al. 2015; Ramiro et al. 2010; UNICEF 2012). There is also growing evidence from developmental neuroscience showing that significant adversity in childhood, including parental abuse and neglect, can disrupt brain structures and functions and impair healthy brain development in ways that undermine lifelong learning, behavior, and physical and mental health (Belsky and De Haan 2011; Shonkoff and Fisher 2013). Indeed, consequences of abuse in childhood are perpetuated across relationships in adulthood, including intimate partner violence and victimhood, as well as the maltreatment of one's own children (Milner and Chilamkurti 1991).

Extrapolating such negative outcomes, the estimated economic losses in the East Asia and Pacific region translate to 1.45% to 3.45% of the gross domestic product (GDP) or an average US $209 billion per year (Dunne et al. 2015; Fang et al. 2015). The societal costs are borne out in low education and a debilitated workforce, and overburdened social welfare and health services, all of which serve to perpetuate a cycle of social and economic disadvantage. Clearly, these are compelling reasons to prioritize the prevention of child maltreatment in LMICs.

Parent Characteristics and Practices Are Associated with Child Maltreatment

Developmental science has achieved significant progress in developing models and testing associations between child maltreatment and parental characteristics and behaviors. These models and research findings justify parenting interventions as an efficacious means to prevent and reduce child maltreatment. First, from a bioecological perspective of development (Bronfenbrenner and Morris 2006), the parent-child relationship represents the most proximal environment in which powerful transactional processes of influence and change occur, especially during the early years of life when preventive interventions are most potent (Van Ryzin et al. 2016). Second, evidence from developmental and social research has identified several parent variables as mediating the impact of poverty on family life and child outcomes. For instance, Conger and Conger's Family Stress Model (Conger et al. 2010) posits that felt economic pressure is indirectly associated with children's adjustment via its negative influence on parents' emotions, self-regulation, and parenting practices. Although as yet not tested rigorously in LMICs, evidence supporting this model comes from a large number of studies conducted with various disadvantaged groups in the USA (see Conger et al. 2010) and is a meaningful framework for considering how economic pressures prevalent in LMICs may increase the risk for harsh parenting and negative child outcomes.

Belsky's (1984) model on the etiology of child maltreatment likewise positions parenting as a central risk and protective factor. The extent to which parents' psychological resources (e.g., personality), social support networks (e.g., marital relationship), and children's characteristics support or undermine parents' psychological health and caregiving efforts can predict propensities toward child maltreatment or adaptive parenting. The evidence from literature reviews and meta-analyses of risk factors for child maltreatment is consistent with this model. Parental stress, depression, and psychopathology; childhood history of abuse; coercive and power-assertive discipline and other aversive interactions; and inaccurate and unrealistic perceptions of the child have all been identified as key risk factors across studies on child maltreatment (Milner and Chilamkurti 1991). In a more recent meta-analysis of 155 studies, Stith et al. (2009) reported large effect sizes for parental anger and hyper-reactivity, high family conflict, and low family cohesion predicting child physical abuse.

Research on parenting and human development is relatively limited in LMICs. It is long recognized that parents' beliefs, behaviors, and their meanings are embedded in cultural context and that even the nature and impact of poverty vary across developed and developing countries (Lansford and Deater-Deckard 2012; Ward et al. 2016). For instance, there is wide variability across developing countries in the use of violent discipline and in beliefs about the necessity of physically punishing children (Lansford and Deater-Deckard 2012). Developmental science thus has to expand in LMICs, in order to understand the generalizability as well as the limits of current understanding of the role of parenting in the etiology of child maltreatment and how specific cultural factors moderate or mediate child outcomes (Teti et al. 2017).

Effectiveness of Parenting Programs to Reduce Child Maltreatment

Given the existing research evidence, it stands to reason that interventions that focus on parental psychological well-being and child behavior management could avert harsh parenting and promote positive parent-child relationships and child outcomes. Parent support programs have been promoted by international development organizations as an effective and evidence-based strategy to prevent child maltreatment worldwide (Butchart and Mikton 2014; Hillis et al. 2016). Moreover, situating violence prevention in parent and family health and social services is a potential solution to the challenge of cost-effective and scalable interventions in LMICs (Ward et al. 2016).

In meta-analyses and systematic reviews of over 200 published studies, parenting programs were found to effectively reduce rates of child maltreatment and associated risk factors such as corporal punishment and negative maternal psychological health (Desai et al. 2017; Mikton and Butchart 2009). A recent meta-analysis found a modest pooled random effect size from RCTs of 31 home visiting and group

parent training programs (Chen and Chan 2016). The studies reported small but positive effects in reductions in child maltreatment, corporal punishment and neglect, ineffective parenting, and unfavorable attitudes regarding discipline and children, whereas there were increases in the use of positive parenting methods and engagement and confidence in the parenting role. Only 2 of the 31 programs analyzed were in LMIC settings (i.e., Thailand and Iran), but notably parents in these countries benefited more from the programs.

Only one published review thus far has focused on the effectiveness of parenting interventions to reduce harsh parenting in LMIC settings (Knerr et al. 2013). This review found 12 RCTs of parent programs implemented in LMICs from 1983 to 2010 (i.e., Brazil, Chile, Iran, China, Jamaica, Pakistan, Turkey, South Africa, Ethiopia), all of which reported significant positive effects of the tested interventions, with small to large effect sizes on parent-child interactions, reductions in harsh discipline, and risk factors for child maltreatment. Nonetheless, more research is necessary to address the key limitations that currently challenge this field: the need for more RCTs and systematic program evaluations in LMICs, valid and standard indicators and measures of child maltreatment, identification of the active components of parenting programs, and evaluations of processes of program implementation (Desai et al. 2017).

Adaptation and Transportability of Parenting Programs in LMICs

To meet the urgent need for interventions in LMICs, and to help bridge the capacity gap in research and evidence-based program implementation, transporting and/or adapting existing evidence-based interventions may be a strategic approach. There are more similarities than differences across cultures with respect to parenting goals and principles that promote positive parent-child relationships and developmental outcomes (Lansford et al. 2016). Moreover, some evidence-based parenting interventions are designed to be culturally sensitive by collaborating with parent participants on their goals and deriving contextually appropriate strategies to address their unique challenges (Mejia et al. 2017). A recent meta-analysis found preliminary evidence that parenting programs retain their effectiveness in reducing child problem behavior when transported from their origin countries to other countries, even with minimal cultural adaptation (Gardner et al. 2016). Another review found equivalent effects for parenting interventions that were either developed within a country or imported from another context, as long as the programs were grounded in similar evidence-based practices (Leijten et al. 2016). Similarly, initial evidence from pilot studies of family interventions in Central Asia, Central America, and Southeast Europe showed generally positive changes in behavioral indicators of violence and decreases in family conflict and child conduct problems (Maalouf and Campello 2014).

Despite the emergence of evidence suggesting the transportability of high-quality, evidence-based parent interventions from HICs to LMICs, various challenges and constraints to program implementation may undermine program effectiveness when delivered in low-resource settings. Barriers to participant engagement and attendance include lack of child care, difficulties accessing services due to cost of transportation, caregiver's ill-health, and substance and alcohol use (Wessels et al. 2016). The financial and time costs of participating in parent programs also interfere with work, and income from work may be especially a priority in low-resource contexts (Mejia et al. 2015). There are also challenges in training facilitators and implementing programs using a collaborative approach, because traditional approaches to education emphasize didactic techniques and instructors' authority (Lachman et al. 2016). With respect to program evaluation, quantitative instruments may have questionable or unknown psychometric properties in LMICs and potential linguistic and cultural validity issues when used with respondents who are less educated and have little experience of responding to such measures. More broadly, macrosystem-level conditions can hamper replication or adaptation of parent interventions in LMICs. Countries may not prioritize violence prevention and lack the mandates and policies to push the agenda and thus do not invest sufficient resources for that purpose. Inadequate human resources, including low research expertise, overburdened service providers, and poor service delivery systems and infrastructure, are social realities that confront efforts to systematically implement intervention programs (Hughes et al. 2014; Ward et al. 2016).

A number of researchers have argued in favor of careful cultural and contextual adaptation of interventions to ensure program feasibility, acceptability, and impact in the target context and population (Barrera Jr. et al. 2013). Cultural adaptation refers to systematic program modifications that consider the target population's culture and context, including language, cultural patterns of behaviors, meanings, and values. Adaptation to the context may entail adjusting delivery systems, approaches, or facilitator selection and support in order to suit environmental and structural conditions in the community. Striking a balance between cultural and contextual adaptations on the one hand, and fidelity to core program components and theories of change on the other, may lead to higher participant engagement and ecological validity while preserving the "active" ingredients in successful intervention programs (Mejia et al. 2015). Nonetheless, more research and models are needed on the process of program adaptation in LMICs and evaluations of these adapted programs (Mejia et al. 2017). Implicit is the need to engage and collaborate with local researchers, service providers, and stakeholders – the culture bearers or insiders – to navigate the balance between adaptation and fidelity in evidence-based parent interventions.

Parenting for Lifelong Health

The Parenting for Lifelong Health (PLH) initiative was born from the evident need to prevent child maltreatment and other forms of violence (i.e., intimate partner and youth) in LMICs. PLH was initially conceived as a collaboration between the World Health Organization (WHO), UNICEF, and universities in South Africa and the UK. PLH aims to develop and test a suite of low-cost parent interventions across the development spectrum in LMICs (http://www.who.int/violence_injury_prevention/violence/child/plh/en/). These programs were derived from core principles from evidence-based parenting and violence prevention programs. Using community participatory approaches, the programs were also developed with key adaptations appropriate to the culture and context of different communities in LMICs. Much of the initial research and development was originally conducted in South Africa, with promising results that can serve as models for extending PLH programs in other settings (see Cluver et al. 2018; Lachman et al. 2017; Vally et al. 2014).

The PLH Program for Young Children (PLH-Kids) – locally known in South Africa as the Sinovuyo Caring Families Program – was originally tested in a small-scale RCT ($N = 68$) to examine program effects and feasibility when delivered to low-income families with children 3–8 years old in Cape Town, South Africa (Lachman et al. 2017). Results showed more frequent positive parenting behaviors and more observed child-led play at posttest assessment in the intervention group, with medium effect sizes. In a larger RCT in the same context ($N = 296$) PLH-Kids resulted in immediate posttest reductions in parent report of harsh parenting and child behavior problems, as well as improvements in positive parenting. Parents were also observed to use less negative parenting and more positive parenting strategies than controls at 1-year follow-up (Ward et al. 2015).

PLH-Kids has been expanded to other LMICs, including the Democratic Republic of Congo, Kenya, Montenegro, South Sudan, Thailand, and the Philippines, where the program is currently being adapted and pilot tested as part of the PLH-Philippines project. The next sections present the Philippine context and describe the PLH-Philippines project that is presently underway.

The Philippine Context

The Philippines is at the forefront in the Southeast Asian region in the development of national policies and plans of action with respect to child protection. Whereas the initiatives are significant and comprehensive, these policies are largely recommendatory, underfunded, and poorly implemented (Madrid et al. 2013). In the devolved governance structure in the country, local government units at the city/municipality and community levels are tasked to implement policies and programs, and the extent to which this is realized depends on local government priorities and resources allocated for child development and protection. Unfortunately, child protection

concerns, particularly violence against children, are typically superseded by other problems that are perceived as more pressing. Programs are also predominantly tertiary rather than preventive (Madrid et al. 2013), and local human resource capacity to respond to the needs of children and families is severely inadequate at only 1.09 mental health professionals for every 100,000 Filipinos (WHO Global Health Observatory Data Repository; WHO and the Department of Health 2007).

National data indicates that the extent of violence against children in the Philippines is pervasive, with the highest rates of harsh discipline relative to five other countries (Brazil, Chile, Egypt, India, USA) in a World SAFE population-based study (Runyan et al. 2010). A recent violence against children (VAC) study was conducted in 2014–2015 and involved 3866 male and female youth between the ages of 13 and 24 from 172 municipalities and cities all over the country (Council for the Welfare of Children & UNICEF Philippines 2016). As self-reported by the youth respondents, 80% had experienced some form of violence in their childhood (prior to age 18); 66% experienced physical violence in childhood, with 60% of these cases occurring in the home. One in two participants reported mild forms of physical punishment (e.g., spanking with bare hand or with soft implement), while a third suffered more severe forms such as being slapped in the face, kicked, or tied up. A slightly higher percentage of males than females reported experiencing physical violence (67% males, 63% females). Mothers, fathers, and siblings were the most commonly reported implementers of the punishment. Similarly, psychological forms of violence such as verbal abuse, threatening, or abandonment were experienced by 63% of respondents in their childhood (65% males, 60% females).Thirty-eight percent reported that family members perpetrated this form of violence in the home.

High rates of verbal and physical punishment suggest that harsh discipline is normative in the country and is contextualized in complex meanings and values in the culture. Filipino parents, in general, subscribe to a more authoritarian style of child-rearing, which is evident in the emphasis on strictness, respect for authority, and obedience (Alampay 2014; Dela Cruz et al. 2001; Jocson et al. 2012). It may also be inferred from the views of youth themselves that physical and psychological forms of punishment are tolerated, if not accepted. Nearly half of respondents did not perceive physical and psychological maltreatment as problems, and thus accessing services was unlikely (Council for the Welfare of Children and UNICEF Philippines 2016). Yet despite perceptions of normativeness, Filipino children disclose feelings of hurt, anger, sadness, and fear in the aftermath of harsh discipline (Dela Cruz et al. 2001; Sanapo and Nakamura 2011). Moreover, the consequences of harsh physical punishment on children's behaviors and psychological adjustment remain demonstrably negative, even among Filipino samples, as reported in the extensive literature (Alampay et al. 2017; Gershoff and Grogan-Kaylor 2016; Lansford et al. 2005).

The pervasiveness and perceived normativeness of violence against children – couched as parental discipline – have implications for interventions. To the extent that physical and psychological abuses are not framed as forms of maltreatment in the cultural context, by the perpetrators and by those who experience them, then

obtaining the support and resources to implement programs and policies to prevent these behaviors is more challenging. In response to the daunting statistics on parent-perpetrated violence, the implementation of evidence-based parenting programs has been identified as a key result area in the Philippine Plan of Action to End Violence Against Children. PLH-Philippines is an initiative that addresses this need.

Parenting for Lifelong Health-Philippines

PLH-Philippines draws from the model of its predecessor in South Africa with the following aims: (1) to culturally adapt the PLH-Kids program for low-income Filipino families, (2) to pilot test the feasibility of the locally adapted parenting program – named *Masayang Pamilya Para sa Batang Pilipino* (MaPa; Happy Family for the Filipino Child), and (3) to test the effectiveness of the program via a small-scale RCT when integrated within the conditional cash transfer service delivery system of the Philippines.

A number of factors that characterize the PLH-Philippines initiative address the previously discussed issues and gaps in violence prevention in LMICs. First, it is a multi-sectoral collaboration between local and international researchers, child and family practitioners and service providers, and the national government agency that governs social welfare programs, the Department of Social Welfare and Development (DSWD). From the earliest stages, the study investigators have collaborated on the conceptualization and design of the different phases of the study. PLH-Philippines investigators have also engaged with government and non-government stakeholders on the development of the program and recommendations for scaling up. It has been essential to have team members who are staunch champions of both the science and advocacy of parenting to support child development and who have extensive social networks across sectors. This purposeful engagement in multi-sectoral partnerships exemplifies the role that developmental scientists must take to advance programs and policies toward meeting the Sustainable Development Goals (Raikes et al. 2017).

Second, PLH-Philippines employs a systematic and rigorous method for adapting the original program to the Filipino cultural context. The project proceeds in several successive phases, from information gathering, cultural adaptation, and feasibility pilot (Phase 1) to a pilot randomized controlled trial to test the effectiveness of the adapted program in the Philippines (Phase 2). To date, this is the first rigorous, systematic adaptation and evaluation of a parenting program in the country. Lessons from the implementation processes and the results of this project can inform the parent intervention and other violence prevention initiatives in other LMICs but also in HICs (Raikes et al. 2017).

Third, as a potential strategy for delivering the program at scale, the adapted *Masayang Pamilya* (MaPa) is being tested within an existing service delivery system in the country, the Philippine conditional cash transfer system, or the *Pantawid Pamilyang Pilipino Program* (4Ps) of the Department of Social Welfare and

Development. 4Ps is a social development program that provides cash grants to low-income families in order to promote health, nutrition, and education of children ages 0–18. Beneficiaries receive US$10 per month (health grant) and US$6 per child, per month (education grant for up to three children per household). These grants are subject to compliance with health conditions (regular checkups and vaccination), education conditions (school enrollment and at least 85% attendance rate per month), and attendance in Family Development Services (FDS) once a month. FDS seminars include sessions on family nutrition, disaster preparedness, and parenting. The MaPa program is presently being tested as a component of the FDS requirement.

Phase 1: Development and Feasibility Test of the Masayang Pamilya *Program*

The activities in this phase approximate the steps in the cultural adaptation process defined by Barrera Jr. et al. (2013): information gathering, preliminary design, and preliminary testing.

Information Gathering A qualitative study was conducted in 2016 involving focus group discussions and interviews with 27 mothers and 20 fathers in a low-income community in Metro Manila. The aim was to examine parents' practices, goals, and needs and preferences and barriers to participation in a parenting program. Filipino parents reported that they wanted to learn how to interact and communicate more positively with their children, effectively discipline their children, and help children manage their negative and strong emotions. Parents also wanted to better understand child development and how to protect their children from perceived environmental risks and dangers. Child behavior management strategies included monitoring and setting limits, talking to and verbally reprimanding, scaring or threatening into behaving, and using of physical discipline (spanking). As expected, respect and obedience were especially important family values that Filipino parents wanted to impart to their children.

Preliminary Design Based on the information obtained from the qualitative study and other relevant literature, PLH-Philippines adapted the original program to fit the qualities, needs, and context of Filipino families. The co-investigators and partners engaged in workshops and meetings to discuss modifications to session content, activities, materials, concepts, and language to arrive at a prototype draft of the MaPa program and facilitator manual (see Fig. 15.1). Adaptations were primarily surfaced in nature, i.e., translation of the manual and materials and modifications in the scripts to better explain concepts and frame them appropriately with respect to Filipino family characteristics. For example, the concept of child-led play in the session on one-on-one time was framed such that relatively authoritarian Filipino parents will find the notion of children taking the lead in an activity more acceptable.

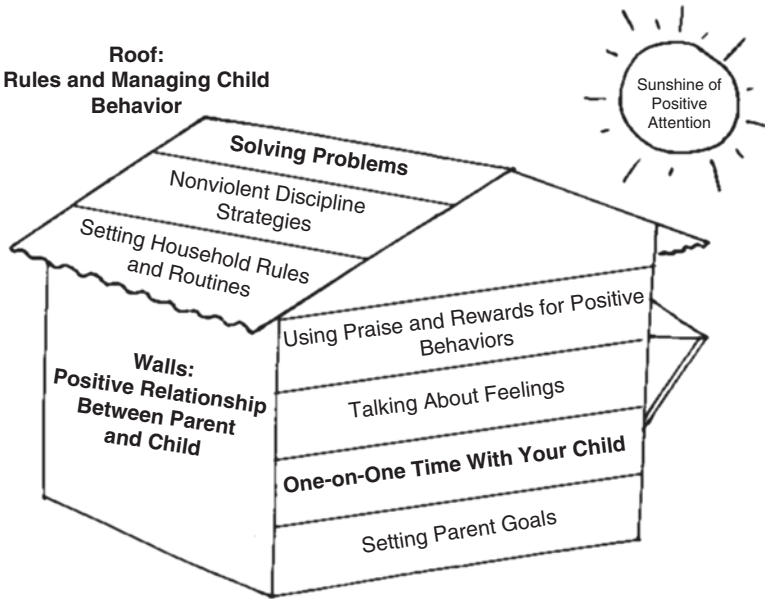

Fig. 15.1 *Masayang Tahanan* (Happy Home) as the framework for the *Masayang Pamilya* (MaPa) Program of PLH-Philippines

Illustrated stories were also redrawn and reconceptualized to reflect Filipino family and community life. Apart from these surface adaptations, the original program's theory of change and content was retained, as they were determined to sufficiently address findings from the information gathering phase regarding parent- and stakeholder-perceived needs. Grounded primarily on social learning theory, the program emphasizes modeling of positive behaviors by facilitators to parents (e.g., acceptance, use of praise), practicing parent skills via role plays during the sessions and at home and collaborative problem-solving. Physical exercises and simple mindfulness meditation activities are implemented to help parents cope better with stress (Kabat-Zinn 2013). The program also contains content to address gender norms regarding caregiving and maltreatment, including illustrations that depicted fathers engaging in child-led play, emotional labelling, and other authoritative positive parenting practices with both sons and daughters.

Preliminary Testing A pilot study was conducted from late 2016 to early 2017 with 30 low-income families to determine the acceptability and feasibility of the MaPa program and whether it can be implemented with fidelity. The study also explored preliminary program effects on child maltreatment and associated risk factors. Baseline data was collected on child maltreatment, positive parenting, caregiver mental health, intimate partner violence, and child behaviors. The measures were translated to Filipino and back translated by fluent, bilingual speakers. Trained graduate students administered the measures orally via structured interviews in the

parents' homes using e-tablets. The MaPa program was then implemented in two groups of 15 mothers each by pairs of trained and supervised facilitators. Posttest data collection followed in the 2 weeks after the last MaPa session, with a 93% retention rate.

Although the sample size and design preclude more robust analysis of effects on child maltreatment, paired *t*-test analyses comparing baseline and posttest scores found large reductions in physical and emotional abuse, as well as parenting stress (physical, $d = -0.71$, 95% CI -1.25 to −0.17; emotional, $d = -0.81$, 95% CI -1.36 to −0.27; parenting stress, $d = 0.63$, 95% CI -1.16 to −0.09). Qualitative focus group discussions conducted with 19 of the participating parents and the 4 facilitators suggest that the MaPa program was acceptable and helpful to the parents. Parents reported that MaPa helped them achieve their goals, such as higher child compliance to instructions and household rules. The mothers also perceived that they learned strategies to build positive relationships with their children, such as one-on-one time and giving praise and rewards. The use of mindfulness-based activities such as "taking a pause" was often referred to as a means to regulate the parent's temper, thereby making harsh punishment less likely. Feedback on program components was then used to revise the MaPa program further prior to subsequent testing.

Phase 2: RCT of the Masayang Pamilya *Program*

The PLH-Philippines study then conducted an RCT evaluation of the MaPa program as part of the 4Ps conditional cash transfer system (ClinicalTrials.gov: NCT03205449). Families who were beneficiaries of the 4Ps program and had at least one child aged 2–6 were recruited to participate in the RCT ($N = 120$). The recruitment phase entailed close coordination with the local DSWD office, social workers, and parent coordinators in the selected community. Trained researchers collected baseline data from the caregivers, using many of the same measures that were piloted in the feasibility study. The participants were then allocated to either the MaPa parent program or the treatment-as-usual (the FDS program of 4Ps). The 12 MaPa sessions were conducted every 2 weeks. The study also included brief assessments every 2 months to examine day-to-day occurrences of child behavior problems, parenting behavior, and parenting efficacy, which culminated in posttest assessments 1 month after program completion. Outcomes will be disseminated to partners and stakeholders in a series of local and national meetings, and – assuming positive results – initiatives to bring the program to scale with the support of government and non-government partners will be planned. Future directions of PLH-Philippines include developing a system of training, supervision, and ongoing capacity building of program facilitators, determining active components and testing variants of the MaPa program, and adapting and testing a program for parents of adolescents.

Conclusion

The 2030 Global Agenda for Sustainable Development includes ending all forms of violence against children as an explicit target, justified by the considerable human, social, and economic costs of violence, especially in LMICs. This chapter demonstrates the significant capacity of developmental science to advance the SDGs, via elucidating the role of parenting behaviors and processes in the etiology of child maltreatment and specifying key principles in effective parenting interventions. Yet much remains to be done for developmental scientists to make inroads in achieving the SDG targets for ending child maltreatment. First, research on parenting and child development, as well as on systematic and rigorous interventions, must be expanded and harnessed in LMICs. Current developmental science predominantly originates from HICs and thus requires nuancing in terms of what risk and protective factors and processes are generalizable and what are culturally or contextually varying or moderated. Moreover, such contextually nuanced knowledge needs to be accessible and useful to the various child protection stakeholders in LMICs who will translate it to programs and policies. Given gaps in research capacity, this entails a concerted effort on the part of the international research community to engage LMIC developmental scientists in meaningful collaborations with other researchers in both LMIC and HIC contexts to enable a sharing of knowledge and resources. Secondly, new modes of partnership among the multiple sectors of science, government and civil society agencies, and local communities are required to translate research evidence to effective, cost-efficient, and scalable programs in LMICs. The two recommendations together reflect a more culturally and contextually grounded developmental science that can support the achievement of the SDG targets toward ending violence against children (Raikes et al. 2017).

PLH-Philippines exemplifies these recommendations by developing multisectoral local and international collaborations to culturally adapt and rigorously test the effectiveness of the *Masayang Pamilya* program in preventing child maltreatment in local communities. Results from the feasibility study support the potential of family-focused initiatives to achieve this particular SDG target. Challenges remain in building a local policy and service delivery system that is based equally on scientific evidence and resource management principles that will help to modify culturally normative practices that may be harmful to children. Nevertheless, the SDG Agenda is instrumental, in that it establishes a global framework and standards for all nations to work toward. This supports the efforts of developmental science to strengthen families and parenting practices to prevent child maltreatment in participatory ways that are sensitive to the context of LMICs.

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Part III
Measurement and Monitoring Development and Well-Being Indicators in Sustainable Development Goals

Chapter 16
Advancing the Sustainable Development Goal for Education Through Developmentally Informed Approaches to Measurement

Alice J. Wuermli, Antje von Suchodoletz, and Amina Abubakar

Introduction

The United Nations Sustainable Development Goals 2015–2030 (SDGs) present a renewed effort of all UN member countries toward improving the lives of all people globally. Several SDGs include targets directly related to human development (e.g., SDG2 target 2 of ending malnutrition and SDG3 on improving health across the lifespan), while all SDGs relate to human development through how they shape the environments and resources that shape development. The SDGs expand ambitiously on the Millennium Development Goals 2000–2015 (MDGs) in light of a global consensus that the MDGs did not go far enough. For instance, the MDG for education (MDG2) had exactly one target: achieving universal primary school. In line with the goal, its indicators to monitor progress were focused on access and

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enrollment (net enrollment ratio in primary education; proportion of pupils starting grade 1 who reach last grade of primary)[1]. Unfortunately, this did not translate into actual learning in many low- and middle-income countries (LMIC) (Prichett 2013). In contrast, the SDG for education, SDG4, goes beyond access, explicitly taking a life-course perspective (from early childhood through adulthood), emphasizing equity in opportunities, and shifting from a single focus on access toward quality of educational services and lifelong learning. Moreover, the ten SDG4 targets include references to learning that happens outside of formal education (e.g., early development and care, vocational training, adult literacy) forcing us to look at nonschool settings that matter for lifelong learning (e.g., home learning environment, remedial education, and vocational training settings) (see Table 16.1 in the appendix for details on targets and corresponding indicators).

As exciting as this sounds, the SDGs have drastically increased the burden on monitoring and evaluation, revealing a stunning lack of consensus on how to measure many of the indicators to be used to track progress at the country level and globally. Human developmental scientists (from now on referred to as developmental scientists) can significantly contribute to this endeavor. Developmental research has long been investigating the processes and mechanisms underlying healthy development and effective learning, with the goal of informing policy and interventions to enable children to reach their full developmental potential. The influence developmental science has had to date is reflected in the language of the SDG4 targets. This includes references to "relevant skills" (target 4.4) and aspects of environments relevant to equity and effective learning (targets 4.2 and 4.a). As such, developmental scientists have been measuring complex developmental and educational phenomena, for instance, teacher-child interactions, which now can be used to inform measurement and assessment of SDG4 indicators.

This chapter briefly reviews *why* measurement matters for the SDGs and what some of the greatest challenges are so far (specifically related to SDG4), how developmental science can inform the debate around *what* to measure in order to inform policy and programs, and *how* to measure these things depending on the question in need of an answer. It is beyond the scope of the chapter to provide a comprehensive review of existing measures and instruments. Rather, the existing evidence base will be used for illustrative purposes. The chapter concludes with recommendations for developmental scientists interested in linking their research to the SDGs and policy processes.

Why: The Role of Measurement, Tracking, and Accountability Toward Achieving SDG4

There is general agreement that "[a] robust follow-up and review mechanism for the implementation of the new 2030 Agenda for Sustainable Development will require a solid framework of indicators and statistical data to monitor progress,

[1] https://mdgs.un.org/unsd/mdg/Host.aspx?Content=Indicators/OfficialList.htm

inform policy, and ensure accountability of all stakeholders."[2] Early in 2015, the United Nations Statistical Commission created an Interagency Expert Group led by member states tasked with the development of an indicator framework for monitoring progress toward the SDGs (IAEG-SDG)[3]. The IAEG-SDG developed a comprehensive compilation of global indicators for each SDG and respective targets and categorized each into tiers according to pre-specified criteria[4]. The Tiers represent different levels of availability and "maturity" of indicators to be used for tracking progress and cross-country comparisons. Tier 1 indicators are conceptually clear and have an established methodology and clearly specified standards, with a large number of countries that collect the data regularly. As of December 2016, there were only a few Tier 1 indicators for SDG4. For example, indicator 4.2.2 represents the participation rate in an organized learning (e.g., preschool) 1 year before the official primary entry age disaggregated by sex. Tier 2 indicators are also conceptually clear and have an established methodology and standards, but data are not regularly produced or are entirely unavailable for many countries. There are several Tier 2 indicators for SDG4, such as 4.3.1 (capturing participation rate of youth and adults in formal and non-formal education and training). Tier 3 indicators have yet to develop an internationally agreed upon methodology and standards, some of which are currently being developed and/or tested. In many cases, Tier 3 indicators refer to things that have yet to be defined conceptually, for example, what it means for children to be developmentally on track (indicator 4.2.1) or for which measurement has proven challenging, for instance, early grade reading skills (indicator 4.1.1(a)). In general, these indicators for all tiers are based in regularly collected administrative data, including census or other large-scale survey instruments.

These discussions around Tiers in the indicator framework highlight some fundamental challenges. First off, low human and institutional capacity hinders the collection of high-quality data from nationally representative samples (World Bank 2017). Furthermore, the SDG process emphasizes how measurement and tracking are key in ensuring accountability and advancing countries toward achieving the SDGs. And while there also seems to be a general consensus that multiple dimensions or domains of human development should be assessed (e.g., socioemotional development, citizenship, civic participation), far less agreement exists around what exactly the constructs are that should be measured (e.g., which cognitive or socioemotional competencies) and how to do so to ensure that measures and indicators are useful for their intended purpose (e.g., improve instruction, within- or cross-country comparisons).

The conversation gets even more complicated when introducing the categories of "global-," "regional-," and "country-"level indicators.[5] As the terminology implies, global indicators are expected to be comparable across countries and

[2] https://unstats.un.org/sdgs/

[3] https://unstats.un.org/sdgs/iaeg-sdgs/

[4] https://unstats.un.org/sdgs/iaeg-sdgs/tier-classification/

[5] http://indicators.report/overview/

thus culturally neutral, whereas regional- and country-level indicators provide for increased flexibility in defining indicators thus making them more sensitive to cultural specificities. Some indicators seem more feasible, objective, and comparable across countries than others (e.g., outputs, enrollment rates), yet are narrow and specific, and have yielded little capacity to improve learning outcomes in the past. Thus, the focus in the international community has shifted toward measuring learning more distinctly and assessing the quality of classrooms and other learning environments that provide information on how to improve educational services.

However, this invariably leads to discussions about the cultural context and values around education, curricula, pedagogy, and learning. Local norms around appropriate and desirable social and emotional competencies, gender, and citizenship raise an additional set of questions with regard to cross-country comparability. The sociocultural context shapes behaviors and social interactions, and thus educational expectations and processes, and students' experiences. How to capture education and learning in a locally and culturally meaningful way then may conflict with the desire for global indicators and cross-country comparability. In what follows, we highlight the ways in which developmental science can aid in addressing this conflict between culturally valid measurement, policy relevance, and comparability.

Developmental Science's Contribution to the SDG Process: The *What* and *How* to Measure

The notion that developmental science has a pivotal role to play in the SDG process is not a new one (Raikes et al. 2017). As such, developmental science may also raise some difficult questions about the desirability of comparability when contextual and cultural variations are substantial. Thus, the developmental sciences have two major contributions to make with regard to measurement: (1) a better understanding of *what* to measure to inform policy and programs aimed at improving lifelong learning and development (e.g., individual-level factors and processes, contextual factors and processes, outcomes) and (2) *how* to measure developmental and educational outcomes, processes, and contexts validly and for different purposes (e.g., national monitoring, program and policy evaluation, program and system improvements and scaling) (Shepard et al. 1998; Yoshikawa 2017; Yousafzai et al. 2018).

Using a Developmental Framework to Identify What to Measure

Regardless of how effectively we measure child competencies or skills, it still provides little information on what learning environments benefit children's acquisition of the said skills. A major contribution of developmental science in achieving SDG4

has been shifting the focus from single-level factors and/or processes to the interconnected nature of factors and processes embedded within cultures and contexts that are relevant to achieving SDG4. Developmental science can inform our understanding of key competencies needed for lifelong learning and provide a "map" of potential targets for intervention at multiple levels of the human ecosystem (e.g., Wuermli et al. 2012). Developmental frameworks, most prominently Bronfenbrenner's bioecological framework (Bronfenbrenner and Morris 2006), allow us to identify developmental and educational phenomena at the individual and contextual levels and their dynamic interactions that support or undermine a person's development and learning (Cappella et al. 2016; Thelen and Smith 2006). Contextual factors, such as educational services, classroom dynamics, teacher-child relationships, teacher well-being, peer relationships, family involvement, family dynamics, and home learning environment, have a rich theoretical and empirical foundation indicating connections with important educational outcomes (Cappella et al. 2016). In addition, schools and communities differ from other schools and communities, and these schools and communities are further embedded in a larger macrosystem reflecting national policies, institutional and economic factors, as well as cultural norms (e.g., gender norms) and attitudes around education, development, and learning. In particular, cultural variations in the social context of schooling add to the differences in educational experiences of children throughout the world. In other words, developmental science guides the selection of *what* to measure at the individual but more importantly at contextual levels in order to understand outcomes of interest (such as children's literacy development).

As such, applied developmental scientists have long recognized that long-term intervention effects can only be achieved if programs take into account the quality of these characteristics and the ecological nature of development and learning (Aikens and Barbarin 2008; Cappella et al. 2016). The SDG4 targets explicitly (e.g., 4.1, 4.2, 4.3, 4.a, 4.c) and implicitly refer to the quality of services and settings relevant to children's and youth's learning and development. In addition, 4.2 refers not only to school-based settings but also to "early childhood development [and] care" settings (e.g., homes, families, health services) more generally. For many years, quality of educational settings has mostly been measured in the structural area, such as class size and attendance rate, staff-to-child ratio, and staff credentials, all of which reflect structural, i.e., relatively easily controllable and regulatory characteristics of the educational service and learning environment. Meanwhile, there is a growing consensus that process quality matters equally, if not more, thus moving quality standards beyond typical foci of resources and structural characteristics.

Process quality refers to the more proximal practices (e.g., interactions between teachers and children) within an educational setting that influence children's everyday experiences and underlie children's development and learning. It usually encompasses dimensions of the emotional climate (including physical and emotional care and support), of instructional quality referred to as pedagogical practices (including strategies and activities to engage children and scaffold their learning), and the organization of group routines and management of children's behaviors (Hamre 2014). Additional aspects of process quality include the quality of interac-

tions among children as well as their interactions with space and materials while being involved in play, activities, or routines (Hamre 2014). Yet, aside from the indicator for 4.a which refers to structural characteristics of school settings, none of the indicators capture other aspects of process quality.

This lack of specificity around quality unfortunately reflects the current situation in many low- and middle-income countries. Notable exceptions include national efforts to measure process quality in pre-primary education and linking it to child development in the countries of Colombia and Peru (as well as Tanzania and Nicaragua more recently). For instance, in the context of the Colombian *De Cero a Siempre* policy, a comprehensive policy aimed at bringing early childhood development services to all families and children, a consortium of institutions, including the intersectoral commission for early childhood and the ministry of education, identified the need for a tool that could measure early child development across domains (e.g., cognitive, socioemotional) and the quality of early childhood education across multiple modalities (low-cost private schools, government-run centers, etc.) while accounting for the substantial cultural diversity of the country (Maldonado-Carreño et al. 2018). The chapter by Motta and Yoshikawa (this volume) describes the process in Columbia on how to measure ECD and early learning outcomes in indigenous and rural, remote communities and how it was integrated into the national policy framework. The *Te Whāriki* approach in New Zealand is a good example from a high-income country where a national curriculum was developed that was tailored to the specifics of Māori culture to ensure that all children learn to value the bicultural and bilingual background of the country (Carr and May 1993).

How *to Measure?*

Identifying what to measure is a necessary first step in the process. It is far from obvious, however, how these phenomena can be measured validly and meaningfully across contexts. Developmental science has produced an impressive set of instruments to measure developmental phenomena. Yet the overwhelming majority of developmental research has been conducted on populations from White, educated, industrialized, rich, and democratic countries and populations (WEIRD), representative of approximately 5% of the world's children (Arnett 2008; Henrich et al. 2010). It is LMICs however that are facing the largest challenges in sustainably improving educational outcomes of their populations.

The inadequacy of instruments to assess development and learning, as well as contexts (e.g., classrooms, home environments) outside of WEIRD environments, also has been limiting our understanding of how children develop across cultures. Researchers from the Global South have aptly pointed out that many of our dominant theories are not reflective of local norms and expectations around child development and thus inappropriate for use across cultures, let alone making meaningful comparisons across countries and contexts (e.g., leVine et al. 1980; Nsamenang 2000; Serpell and Haynes 2004; Whiting and Whiting 1975). This discontent has

been directed toward developmental assessments for research purposes as well as population-based monitoring. However, today's world is marked by globalization of information, economic processes, and migration (voluntary and involuntary). This poses a fundamental question to policy makers about how to prepare their children best to lead a prosperous and healthy life as economic opportunities are shifting from low-skill manual labor to high-skilled, technology-driven jobs. This move to "modernization" has often been accompanied to some degree by a "westernization" of social norms, including norms around parenting. Yet, certain cultural, collectivist values remain and coexist with increasing individual decision-making and agency in socioeconomic spheres (Kagitcibasi and Ataca 2005).

There are often multiple ways to assess or measure a particular phenomenon, but not every method will be appropriate for any given purpose. For instance, it is rather unlikely that one would use biological markers, such as respiratory sinus arrhythmia (RSA) to assess children's school readiness for national monitoring purposes, even though such neurobiological measures have been linked to a child's behavioral competence and cognitive functioning in the classroom in the USA and Canada (Blair 2002; Hastings and De 2008). Comparably unlikely is a scenario where a secondary school teacher might use an instrument akin to the OECD Programme for International Student Assessment (PISA), a 2-hour-long assessment of 15-year-olds in science, mathematics, reading, collaborative problem solving, and financial literacy, as a formative assessment on a bi-weekly basis to make ongoing adjustments to instructional practices. (For a review of general categories of measures for different purposes, see Shepard et al. 1998; Yoshikawa et al. 2017.)

The Early Grade Reading and Math Assessments (EGRA, EGMA) were developed with multiple uses in mind. How effectively these assessments perform in different usage scenarios however remains unclear (Gove 2015; Gove and Wetterberg 2011; Halpin et al. 2016). The International Development and Early Learning Assessment (IDELA), a multi-domain assessment of preschool-aged children, was developed by Save the Children primarily to assess the impact of their early learning programs. Meanwhile, however, the instrument has been tested in samples more representative of national diversity, providing evidence that the assessment could potentially be considered for national-level monitoring (Pisani et al. 2018; Wuermli et al. in preparation). While feasibility (i.e., ease of administration, not too time-consuming), a primary concern in national-level monitoring, was a major consideration in the development of IDELA, EGRA, and EGMA, their comparability across countries is still being debated (Halpin et al. 2016; Halpin et al. under review).

Assessments may fail to assess the competence in question. For example, Banerjee and colleagues (under review) are finding that children in West Bengal are capable of solving a range of arithmetic operations in a market setting yet do very poorly on the arithmetic part of the Annual Status of Education Report (ASER), a household-based survey assessment of children's learning. Even though the test was developed with the Indian context in mind, this example demonstrates how familiarity (or not) with how the problem is presented can introduce substantial bias (Banerjee et al. under review; see chapter X on bias for details).

Measures and assessments to inform policy and programs need to reflect localized frameworks around child development and learning. This is particularly important in order to ensure buy-in and support from families and communities, for instance, with regard to the education of their children (Serpell 2011). There are many examples of cases where governments rejected an international assessment in favor of a locally developed instrument that better reflected the country's values and in many cases seemed to draw a more meaningful picture of their children's development. Such national endeavors can stand in stark contradiction to demands for cross-country comparability.

Challenges to cross-country equivalency are by no means a new concern. PISA was developed with comparability in mind, within and across countries. PISA can provide valuable information on educational inequities. As such, the test contents, as well as the contextual information collected from students, are determined and agreed upon by experts representing all participating countries. The constructs in the context questionnaire undergo extensive validation, and, as such, countries' ability to change or drop items or scales on an individual basis is extremely limited (OECD 2015). In 2015, 72 countries implemented PISA (OECD 2017). There was certainly cultural diversity among the 72 countries, though only 2, Algeria and Tunisia, were on the African continent. The vast majority were upper middle-income or high-income countries. Even so, recent investigations found there to be substantial differential item functioning (DIF) across all countries, for practically all items (Zwitser et al. 2017).

One possible approach to developing or testing national-level indicators is to validate them against more sensitive developmental assessments. Developmental scientists are well situated to tackle this task of developing, adapting, and rigorously validating such developmental assessments using advanced psychometric methods (e.g., factor analysis, item response theory) and subjecting measures to tests for measurement invariance (aka equivalence) (Millsap 2011). Rubio-Codina et al. (2016) did just this to investigate the validity of several other assessments, using the Bayley scales of infant development often referred to as the "gold standard" in Bogota, Colombia, though some researchers have started to question the use of the Bayley as the gold standard (Fernald et al. 2017).

Thus, in the past decades, various research groups have developed assessment measures specifically targeted for use in LMICs. Examples of such measures for ECD include the Malawi Developmental Assessment Tool (Gladstone et al. 2010), the Kilifi Developmental Inventory (Abubakar et al. 2008), and the Rapid Neurodevelopmental Assessment Scale (Khan et al. 2013), among others. These tools have not only been found to be psychometrically sound but have been used successfully across many different cultural context and settings in LMICs. However, due to a problem of comparability, perceived duplication of efforts, and lack of consistency in assessing domains across the different context, there has been a call for developing measures from a global perspective and to ensure consistency. For example, the WHO has recently been working toward developing a population-based indicator of child development in the first 3 years of life (Gladstone et al. 2017). This indicator is being developed based on items selected from datasets from ten countries in the world. Using advanced statistical methods, the team aims to develop a continuous scale to compare developmental scores across age across different cultural contexts (see Jacobusse et al. 2006).

"To Be or Not to Be" Comparable

Whenever subgroups are to be compared, measurement invariance of the instrument needs to be considered carefully. The decision about what level of comparability across contexts is necessary may also vary across different age groups, developmental domains (e.g., literacy, socioemotional competence), and learning contexts (e.g., home, school) and will be reflective of domestic policy priorities. For example, PISA is meant to inform policy by nature of comparing segments of the population (e.g., girls versus boys, rural versus urban, rich versus poor) and can point toward gross inequities. For these comparisons to be of a substantive nature, meaning that the difference in scores is truly based on difference in the skill of interest (e.g., math) and not test bias, the measures need to be invariant across the groups. For example, a person who has had practice in taking standardized tests is likely to do better than a person who has never taken one, test scores being therefore more reflective of test-taking ability than the underlying construct to be measured (Millsap 2011).

There are rigorous methods to establish invariance, or identify items or tasks that are the sources of non-invariance (Millsap 2011), including factor analytic approaches and item response theory. Establishing measurement invariance provides the basis for making meaningful comparisons across subpopulations. That said, there might be two somewhat conflicting goals. On the one hand, there is interest in assessing a construct or developmental competence, for instance, language acquisition. We may hypothesize that children growing up in better resourced settings will have advanced language skills compared to children growing up in resource-poor settings of country X. Thus, if we want to assess differences in language development between poor and rich, we need to make sure that we are actually measuring the same thing in both groups. For one, this implies that all children would be assessed in their primary language, the language spoken at home. Once we have shown that children in resource-poor settings are indeed faring more poorly on language development, we can proceed to identify interventions to mitigate this situation.

On the other hand, policy makers may identify priorities that in turn dictate what competencies children need at what age in order to meet specific benchmarks. In some cases, expecting a measure to be invariant might just be utterly unrealistic or nonsensical. For example, the government of Bhutan decided to have two national languages, Dzongkha (the only Bhutanese language out of 20 plus with a writing system) and English. Less than 30% of children in Bhutan grow up speaking Dzongkha at home, and very few speak English – the vast majority of children speak one of the Bhutanese or Nepali dialects. In grade 1, primary language of instruction is English, and Dzongkha is taught as a second language. There are valid reasons for such a system (similar to the German speaking part of Switzerland where the official language is German, while the language spoken at home is one of several Swiss German dialects). As such, these expectations starting in grade 1 determine what it means to be ready for school. Save the Children in collaboration with the Ministry of Education implemented the IDELA using a linguistically diverse sample of children reflective of national diversity. Given the government's priority of English being the

language of instruction in school, the language tasks were administered in English. This resulted in overwhelming floor effects, challenges in establishing a robust factor structure, and non-equivalence of the measure across language groups (Wuermli et al. in preparation). In this particular case, it seems pointless to strive for invariance of a measure that will inherently be biased against children who do not speak English.

Does this necessarily invalidate the assessment and render it useless for the government of Bhutan? Not necessarily. The stark differences between achievements on the language part of the IDELA provide ample information about which children are lacking command of the English language and will thus likely have problems keeping up in primary school. From a policy perspective, this provides the government with at least two options: either to ensure that children know English by the time they start primary school or to adapt curricular and pedagogical approaches and expectations in early primary grades. We cannot however draw conclusions about differences in language development between language groups from these results.

The variation in national priorities of course does not make the conversation about global indicators and cross-country comparability any easier. In the meantime, human developmental researchers have the chance to further build the evidence base on how children and youth develop across diverse contexts, especially through the development, adaptation, and rigorous testing of measures and instruments. This pertains not only to individual-level outcomes but also to contextual factors and processes, such as classroom quality, home learning environment, and indicators of socioeconomic status (Wuermli et al. in preparation; Yoshikawa et al. 2015).

Concluding Remarks

Developmental science has certainly informed thinking in the international human development and education communities as is reflected in the language of the SDGs, in particular SDG4. However, there remains a lot of work to be done. First and foremost, there needs to be a thorough understanding of how children develop and learn across cultures and contexts, and developmental scientists, especially from within a culture, are probably best situated to tackle this task. Part of this task requires implementing a measurement agenda that adheres to the highest-quality methodological standards.

Developmental scientists should focus on validly measuring key developmental constructs and processes which can shed light on possible intervention targets to allow a child to realize their full developmental potential given the specific demands of and resources in his or her environments. Robust and valid measures of these competencies can then serve as a foundation for the development of measures and assessments for national-, regional-, or even global-level monitoring.

Measures will need to be culturally valid and sensitive to developmental change across time and to contextual factors (including interventions). From the SDG perspective, these measures and instruments should be feasible and able to capture diversity best possible at the country level. Where cultural variation is too large to

establish invariance, items, or tasks that are sensitive to cultural or contextual variation should be demarcated and reconsidered in nationally representative samples and when making comparisons between subpopulations.

Comparisons across groups within countries and comparisons across countries have similar objectives: to identify sources of inequities and guide resource allocations. Whenever comparisons across subpopulations or across countries are made, however, it is important to know what exactly is being measured, what was intended to be measured, and what for. While it may make political sense to keep a measure that is biased against one group, it is important to emphasize the possible source of bias, and not claim group differences in development of a particular competence. Conversely, cultural relevance may need to be prioritized when the goal is to understand development in context in order to find effective approaches to programming. The bottom line in the debate about comparability and measurement invariance is the question about what it is we want to learn. Many developmental milestones are shaped and determined by social norms and values and deeply embedded in sociopolitical systems and the political economy. Measurement for scientific advancement and measurement to inform policy and programs cannot simply be conflated. Many considerations need to go into the decision on what measures and instruments to use for national-level monitoring. Some instruments may serve multiple purposes; others may yield little information on actual developmental and learning outcomes or be too resource intense and impractical for national-level monitoring. However, the two can and should inform each other.

That said, developmental researchers should aim to work with larger, more representative samples. Small convenience samples raise several challenges, including inadequacy to capture a countries diversity (e.g., ethnic, language) and lack of statistical power to conduct advanced psychometric analyses including tests for invariance. A priori calculations of statistical power and careful consideration of the sampling methodology will be paramount in addressing these challenges.

There has been a substantial increase in interest in measuring and harnessing multi-domain or holistic development in LMIC contexts. International NGOs such as Save the Children and the International Rescue Committee, among others, have heavily invested in developing interventions that not only target basic skills (e.g., literacy) but emphasize socioemotional learning as a core component of what children and youth need to succeed. Both of the organizations mentioned here, as well as many others, are strongly committed to research and the generation of evidence, emphasize the importance of conducting rigorous impact evaluations, have made substantial investments in developing high-quality measures and assessments to aid in this endeavor, and have been partnering with independent researchers in an effort to establish the robustness of these assessments (Pisani et al. 2018; Wolf et al. 2017).

Not surprisingly, over the past two or three decades, we have seen a huge amount of data collected in LMICs. Undoubtedly we will need many more such efforts in order to provide countries worldwide with tools to inform their approaches toward achieving SDG4. However, we propose developmental scientists make a concerted effort at revisiting some of the datasets to specifically investigate the psychometric

properties and measurement invariance of the supposed constructs. Before we reinvent the wheel, we should take advantage of such rich existing data.

Developmental scientists should seek partnerships with high capacity implementing organizations or governments to ensure that (a) their research aligns and thus is relevant to the SDG process and (b) their findings find their way into applications and thus yield maximum impact. Engaging in such partnerships is obviously not without challenges. But the proliferation of virtual networking platforms and communication channels has supported the development of research and practice networks in almost all corners of the world (e.g., Education Quality and Learning for All (EQUAL), the Early Childhood Development Action Network (ECDAN), the African Early Childhood Network (AFECN), and the Arab Network for Early Childhood Development (ANECD).

Developmental researchers have a pivotal role to play in determining what should be measured to capture outcomes and processes relevant to development and learning. From this we hope to expand our knowledge about how children can learn and develop given the resources available within a particular context, based on which governments and international development actors can make informed decisions about where to invest.

Appendix

Table 16.1 Sustainable Development Goal 4 targets and indicators

SDG4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	
Targets	Indicators
4.1 By 2030, ensure that all girls and boys complete free, equitable, and quality primary and secondary education leading to relevant and effective learning outcomes	4.1.1 Proportion of children and young people: (a) in grades 2/3, (b) at the end of primary, and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex
4.2 By 2030, ensure that all girls and boys have access to quality early childhood development, care, and pre-primary education so that they are ready for primary education	4.2.1 Proportion of children under 5 years of age who are developmentally on track in health, learning, and psychosocial well-being, by sex
	4.2.2 Participation rate in organized learning (1 year before the official primary entry age), by sex
4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational, and tertiary education, including university	4.3.1 Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by sex
4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs, and entrepreneurship	4.4.1 Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill

(continued)

Table 16.1 (continued)

SDG4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	
Targets	Indicators
4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples, and children in vulnerable situations	4.5.1 Parity indices (female/male, rural/urban, bottom/top wealth quintile, and others such as disability status, indigenous peoples, and conflict-affected, as data become available) for all education indicators on this list that can be disaggregated
4.6 By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy	4.6.1 Percentage of population in a given age group achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by sex
4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship, and appreciation of cultural diversity and of culture's contribution to sustainable development	4.7.1 Extent to which (i) global citizenship education and (ii) education for sustainable development, including gender equality and human rights, are mainstreamed at all levels in (a) national education policies, (b) curricula, (c) teacher education, and (d) student assessment
4.A By 2030, build and upgrade education facilities that are child, disability, and gender sensitive and provide safe, non-violent, inclusive, and effective learning environments for all	4.A.1 Proportion of schools with access to (a) electricity, (b) the Internet for pedagogical purposes, (c) computers for pedagogical purposes, (d) adapted infrastructure and materials for students with disabilities, (e) basic drinking water, (f) single-sex basic sanitation facilities, and (g) basic handwashing facilities (as per the WASH indicator definitions)
4.B By 2030, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing states, and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical engineering, and scientific programs, in developed countries and other developing countries	4.B.1 Volume of official development assistance flows for scholarships by sector and type of study
4.C By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing states	4.C.1 Proportion of teachers in (a) pre-primary, (b) primary, (c) lower secondary, and (d) upper secondary education who have received at least the minimum organized teacher training (e.g., pedagogical training) pre-service or in-service required for teaching at the relevant level in a given country

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Chapter 17
Bringing Life Course Theory to the Sustainable Development Goals

Prerna Banati

Introduction

Life course theory as an academic orientation emerged over the last 50 years across a number of disciplines including neurobiology, child psychology, sociology and population sciences. Early empiric evidence to support such an approach came from demographic longitudinal studies of children and their exposures to events, family, education and work roles, describing life trajectories. Developmental psychology introduced notions of life stages and turning points, while sociology added concepts of evolving history, adaptation and social conditions. These fields have extensive literature bases exploring the application of life course analyses in specific domains. Despite varying disciplinary origins, these fields have shaped an approach that is largely consistent, with many common features including the roles of history, society and culture in affecting individual experiences at each life stage.

During the 1950s, sociological research rarely delved into the complexities of life. The rapid diffusion of social surveys tended to cover a wide breadth of topics with little depth. This period was soon replaced by an explosion of inquiry that explored the continuity and change of human lives in relation to interpersonal, structural and historical forces (Elder et al. 2003). Pioneering research in the early twentieth century launched a number of key longitudinal studies of young people which were designed to follow the developmental patterns of children, with no intention to extend into adulthood. Nevertheless, many were extended into the later years, collecting information on education, work, marriage and parenthood. This wealth of data prompted a new way of thinking about human lives and developmental trajectories across a full lifetime (Elder 1994). The young people in these early studies experienced momentous social change during their lives that has profound

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influences on life trajectories – the Great Depression, two World Wars, the Cold War, the Vietnam War, the Civil Rights Movement, the Women's Movement, periodic prosperity and economic downturns. Early longitudinal studies were not designed to capture unforeseen social shifts. However, these experiences laid the ground for the modern outlook of life course research seen today (Elder et al. 2003).

Going forward, one could see life course research moving into a postmodern phase. Social, political and economic realities have changed significantly since the onset of the Millennium Development Goals (MDGs). A number of poor countries have graduated to middle-income countries, but gains have been spread unevenly. Climate change, market volatilities, new technologies and expanding access to information and communication are contemporary features framing the challenges for the Sustainable Development Goal (SDG) period. The disposition of life course research today incorporates a wider range and complexity of topics, including pervasive technology, individualization and self-direction, impacts of the global recession on structural unemployment and economic vulnerability, interracial families, mobility and migration and, notably, the impact of inequalities.

The four key tenets that underpin life course theory were first described by Glen Elder in his seminal article *The Life Course as Development Theory*, published in 1998. Empirical findings have confirmed these principles (Elder 1998), and we find they have abundant relevance to our discussion of SDGs.

1. The life course of individuals is embedded in and shaped by historical times and places they experience over their lifetime. In exploring a person's micro-historical (individual) experiences as they operate within a macrohistorical (history of time) framework, this approach can help understand an individual's current attitudes and behaviours and how they may be influenced by decisions and actions made (by themselves or others) at another time and in another place. The significance of this principle is clarified by contrasting the lives of children born at the start of the MDG period to their peers born at the start of the SDGs, 15 years later. Overall, children of the SDGs have benefitted from global development action taken during the MDG era. On the whole, children born today are less poor, with generally rising living standards, with many families noticing improvements in their homes and communities. They now are more likely to have access to consumer goods and services such as electricity, water and sanitation and roads. Overall, children born today are less likely to be stunted. An African girl child is 30% more likely to be enrolled in primary school today than in 2000. A mother is a third less likely to die in childbirth than in 2000 and more likely to have a skilled birth attendant available to assist in delivery (United Nations 2015).

   However, when we contrast these cohorts, it is clear that progress we attribute to the younger generation has been uneven. Often it is the children from well-off families who experienced greater gains. Disadvantage is increasingly concentrated in the most vulnerable and marginalized, and inequalities are becoming further entrenched (Edwards 2015). Families who have benefitted least from economic growth face the greatest risks, such as impact from health shocks or

repeated illness leading to lost income. These families have the fewest resources to cope, and their situations point to the need for social safety nets to mitigate the impacts of vulnerabilities they face. Gaps are growing between rich and poor, between rural and urban areas and between ethnic majority and ethnic minority children (OECD 2015).

Inequality between countries may have decreased in recent decades, thanks to the progress achieved by emerging countries, but domestic inequality – what is clearly seen by individuals in their neighbourhoods and communities – has increased (Milanovich 2016). Evidence show that self-perceptions of well-being is more likely related to relative rather than absolute wealth (OECD 2009). Over the last 20 years, a majority of countries have witnessed growing disparities in well-being outcomes because of gaps in incomes, education and health. As Vandermoortele (2015) poses, 'Why, then, has human development been characterized by such a systemic discrimination? Inequality is the short answer, because it has made the ladder of opportunity much steeper to climb. When high inequality exists, family backgrounds begin to determine outcomes rather than individuals' efforts and talents…. meaning that high inequality reduces social mobility'. The significant advances seen during the MDG period have engendered a different set of challenges for SDG children. This steep ladder of opportunity will undoubtedly shape the lived experiences of children today and into their future.

Different 'life patterns' between these cohorts will have important implications for sustainable development. A case in point is the 'technology revolution' which is seen as a potential catalytic tool by SDG advocates (ITU 2017). Human use of digital technology has increased exponentially over the past decade. Access to information and communication technologies through social media and digital platforms (often accessed using mobile phones) has unique and profound impacts, particularly on young people today. This raising important questions of how time spent on digitally mediated activities might affect children in positive or negative ways (Putnam 2000; George and Odgers 2015). Digital technology offers many potential benefits to children, allowing them to access educational or health resources, where services may not be readily available, or providing spaces for participation. At the same time, there are legitimate safety concerns around who children interact with online, if they experience cyberbullying or access age-appropriate content, or whether screen-based communication might hurt their social development or well-being (Kardefelt-Winther 2017). How public policy balances these tensions between protecting children and empowering young children's exposure to technology today will have significant bearing on how they realize their rights during the SDG era.

2. The developmental impact of a succession of life transitions or events is contingent on when they occur in a person's life. The timing of life transitions has long-term consequences through effects on subsequent transitions. The ability of public policy to shape life transitions and their impacts can be exemplified in global efforts to reduce child marriage rates. Marriage is a momentous life transition and, in many parts of the world, marks the beginning of 'adulthood'. Early marriage tends to perpetuate the cycle of poverty by cutting short girls' education,

pushing them into early and repeated pregnancies and limiting their opportunities for employment. Mounting evidence shows that early marriage is detrimental to girls' health, with the majority (90%) of adolescent pregnancies taking place within marriage (Girls Not Brides 2017). Pregnancy and childbirth are dangerous for girls: globally, they are among the leading causes of death for girls age 15–19. When adolescent girls survive childbirth, they can be left with devastating injuries such as obstetric fistula. Investments in increasing access to and retention in secondary school can be catalytic in changing the lives of adolescent girls who might have been married off. Evidence shows that girls who have completed secondary education are six times less likely to marry as children. Educated mothers are more likely to be able to provide for their children and less likely to marry them at a young age. Influencing these drivers has bearing on meeting Sustainable Development Goal 5.3 to eliminate all harmful practices, such as child, early and forced marriage and female genital mutilations, in particular indicator 5.3.40 which measures the percentage of women aged 20–24 who were married or in a union by age 18. It also has immense bearing for the next generation of children born of young mothers, for whom life chances are also compromised (Ganchimeg et al. 2014).

In substance, this principle confirms that timing matters and introduces the notion of 'critical periods'. The first 1000 days are a well-acknowledged critical period for development, where an absence of critical inputs can have lifetime consequences. More than 200 million children in developing countries are at risk of not meeting their developmental potential in the first years of life as a result of poverty, inadequate stimulation and malnutrition (Grantham-McGregor et al. 2007). This early disadvantage is likely to result in lower educational achievement and subsequently lower earnings in later life, therefore perpetuating social inequities and contributing to the intergenerational transmission of poverty, poor health and development (Baker-Henningham and Lopez Boo 2010). Interventions in early childhood which promote the formation of cognitive-language, social and emotional skills can reduce inequalities between advantaged and disadvantaged children and also improve the productivity of the society as a whole (Heckman 2006). Evidence is growing to suggest the adolescent period may also be a unique critical window (Banati and Lansford 2018). Adolescents exposed to famines seem to be at significant risk for stunting later in life, even potentially more so than their younger counterparts (Akresh et al. 2012; Holmqvist and Pereira 2017).

Here we also introduce the concept of cumulative disadvantage. Life course scholars see cumulative advantage and disadvantage working in patterns of changing cohort trajectories (DiPrete and Eirich 2006). The impact of stressors on an individual is cumulative, making it difficult for individuals to catch up once they fall behind. Evidence from Vietnam shows that 48 per cent of those in the bottom quartile of math scores at 12 had left school by 15 (Rolleston et al. 2013), further limiting their life chances. Costello et al. (2007) have shown that low-birth-weight baby girls show increased risk for depression during adolescence. Studies of divergent trajectories have contributed to thinking on population

inequality, particularly in health (Ross and Wu 1996), and, importantly, the roles of individual agency and resilisence when operating within macrostructural realities.

3. Lives are lived interdependently, and social and historical influences are expressed through a network of shared relationships. Historical events and individual experiences are connected through the family and the 'linked' fates of its members. The misfortune of one member is shared through relationships. Tumbling impacts in poor families, who have benefitted the least from economic growth and are unable to absorb shocks, can have long-term individual consequences. The longitudinal study, Young Lives, describes the life of Hung, a 17-year-old boy living in rural Vietnam: 'A few years ago, his family lost its entire crop of oranges after a flood left them all rotten. Two years later, they lost their pigs to foot-and-mouth disease. "We had 45 pigs. They were very big and as long as a shoulder pole (yoke)" says Hung's mother who comes from a poor family of eight children. "I burst into tears when counting how little money we earned that year". Then, Hung's brother, who has never been healthy, fell ill and needed surgery, which was both worrying and costly. Hung dropped out of school and started looking for a job, finally finding work with a construction company. He still has hopes for the future…' (Young Lives 2016.)

   The UN Secretary General (2010) stated 'at the international level, the family is appreciated but not prioritized in development efforts. The very contribution of families to the achievement of development goals continues to be largely overlooked, while there seems to be a consensus on the fact that, so far, the stability and cohesiveness of communities and societies largely rest on the strength of the family. In effect, the very achievement of development goals depends on how well families are empowered to contribute to the achievement of those goals. Thus, policies focusing on improving the well-being of families are certain to benefit development' (United Nations Economic and Social Council 2011). In many parts of the world, families play central roles and are the primary source of protection and insurance against hardship. They offer identity, love, care and development to their members and form the core of many social networks. Investment in the family, complemented by targeted support for the most vulnerable families at risk of poverty, exclusion and deprivation, is a fundamental building block of cohesive societies (Eurochild 2012).

   How social normative practices can be shifted to empower and improve lives is subject of significant discourse and has relevance for meeting the SDG targets in a number of domains. One such example is where advocates for women's rights have furthered the goals for achieving gender equality and empowerment for all women and girls by placing unpaid care and domestic work on the global policy agenda. Analyses have demonstrated that women bear the burden of household care and domestic work across countries and contexts (UN Women 2016). Research has shown that women spend three times more time on unpaid care and domestic work as men, carrying out essential tasks for the reproduction and daily living of the household and its members (United Nations 2017). In many parts of the world, the inequitable burden of domestic work and unpaid

care starts in childhood, is solidified during adolescence and continues throughout adulthood. Increasingly, evidence is showing that thresholds exist beyond which caregiving can become detrimental for schooling, mental and physical health and other well-being outcomes (Becker 2007). The inclusion of unpaid care and domestic work in the Sustainable Development Goal (SDG) 5, which, in Target 5.4, calls for recognizing and valuing 'unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate', is a step forward to redressing gender inequalities (Camilletti et al. 2018).

Elder's original description of 'linked lives' focused on links between members within nuclear families, though one can imagine interdependence across multiple generations, between birth family and married family, as well as across communities. Increasingly with expansion of the Internet and mobile technologies, the nature of relationships are changing, and connectivity will enable more people to remain 'linked' regardless of physical distance.

4. Lastly, individuals construct their own life course through the choices and actions they take within the opportunities and constraints of history and social circumstances. Parents and children made choices, and some engage in effective adaptations within available options and constraints. During the recent economic recession, in a number of countries, under mounting economic pressures of their households, mothers sought and found jobs amidst scarce options, while their children assumed responsibilities in the home and community. They were involved in 'building a new life course'.

   A contemporary issue of significance here is the current migration of refugees from the Middle East and North Africa to Europe. While choices are undeniably constrained in humanitarian disasters, there are many stories shared of the decisions to undertake a long and perilous journey in hopes of a better life. Many migrants into Europe are young men, though the numbers of unaccompanied women and girls are increasing. These children are sometimes traveling alone. UNICEF (2017) reports that, globally, 31 million children are living outside their country of birth, including 11 million child refugees and asylum-seekers; another 17 million children have been displaced within their own countries by violence and conflict. They make their way to new homes by land, by air and by sea. Motivations can include the search of safety and security, rejoining family members or the pursuit of new opportunities. Often there are multiple reasons for moving. Some journeys are planned for years, while others must flee without warning. Unpacking migration illustrates the diversity and tensions in the constructions of life trajectories – between individual migration intention (in hopes of a better life) and the macrostructural realities that constrain choices and force movement.

> The intergenerational perspective lends value here. One can imagine that individual constructions and imaginations of life trajectories extend to the trajectories of their children. The probability that individuals would like to migrate – or is planning to migrate – increases as the perception that the community to which they belong is not focused on improving child welfare. The effects are comparable to those seen with factors related to economics, governance and lack of security which are usually put forward as likely drivers of migration. People living in household with children are more likely to dream of moving abroad, while, when it comes to the realization, living in household with children seems an obstacle as they are the less likely to plan it (Burrone et al. 2017).
>
> These choices and actions, considerations of self and for family, are reduced in complexity when responding to SDG Target 10.7 which calls to facilitate orderly, safe and responsible migration and mobility of people, including through implementation of planned and well-managed migration policies, and measured by a simple indicator 10.7.89 which counts the number of refugees.

Closer examination of the four tenets of life course theory described above highlights the importance of looking at *trajectories, turning points and transitions,* which are not well captured in the framework of the goals nor among their indicators. Current SDG measurement efforts are cross-sectional, capturing snapshots across time. This limits our understanding of trajectories and turning points in life, which could help to identify critical periods of investment. The use of cross-sectional indicators proposed to monitor the SDGs restricts our ability to see the evolution of an individual over his or her life course. The current SDG structure limits assessing potential complementarities or efficiencies of interventions across the life course or where interventions could minimize losses to investments made earlier in the life course. We are also unable to detect the impact of interventions today on future well-being.

Figure 17.1 provides an illustration of how a life course approach might be applied to a selection of SDG indicators with a bias towards childhood outcomes. Indicators, presented in boxes, are positioned according to the expected time of the outcome measured. A set of hypothesized causal relationships are described by arrows between indicator boxes. By showing temporality and intersectorality, such an analysis can further a life course and holistic framing of the SDGs and can be a useful conceptual exercise to begin considering historical time and place, the timing of lives, linked or interdependent lives and human agency. It can also usefully point to appropriate entry points or sequencing of interventions.

Life course approaches rest on longitudinal cohorts and intergenerational family studies. In the final part of this paper, we describe some examples where longitudinal data has provided important contributions to addressing development challenges.

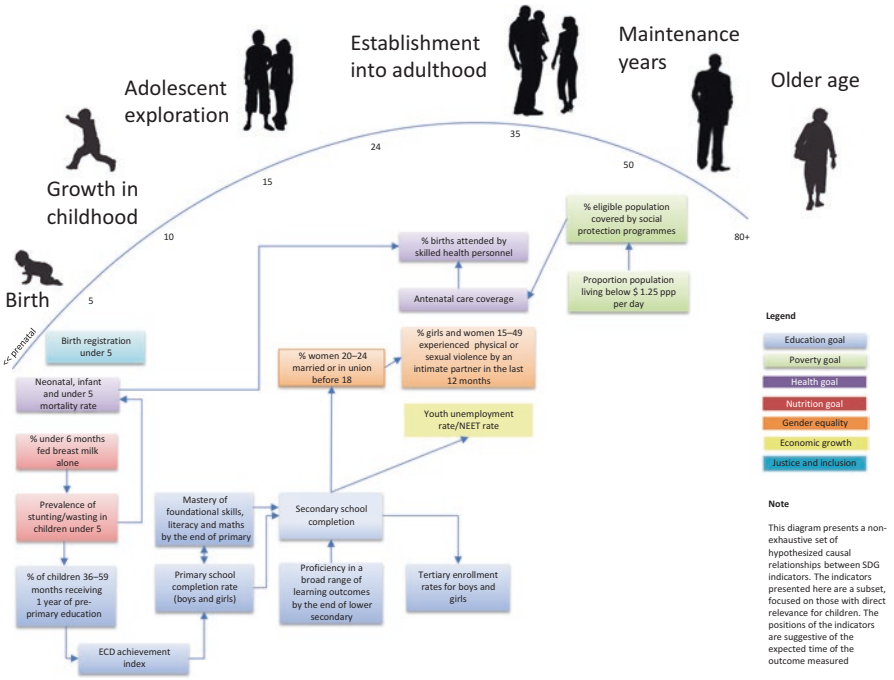

Fig. 17.1 A life course interpretation of illustrative indicators of the Sustainable Development Goals

Longitudinal Research as a Tool to Measure and Understand Development

Longitudinal studies, following the same individuals over significant periods of time, have proved so valuable to the construction of effective public policy and design of effective public programs that many governments have invested heavily in the creation of longitudinal studies. Longitudinal studies are now widespread throughout the globe, including in poor country settings with weak infrastructure.

Longitudinal analyses have competitive advantages: capturing the dynamic nature of processes that shape human development; evaluating cause and consequence; providing an understanding of the drivers underpinning SDG indicators; providing an assessment of the timing of development windows, quality checking and cross-sectional estimates; and evaluating program and policy interventions. Case examples suggest such applications can be usefully applied to policy and programmes.

This section introduces three working examples of how longitudinal studies contribute to country responses to the SDG challenges and in particular how longitudinal data can be used to:

1. Understand enduring change and equitable progress by analysing the dynamics of risk in a given cohort (e.g. repeated or persistent experiences of poverty, something not captured by annual cross-sectional estimates).
2. Uncover time-specific complementarities across goals and targets to inform coordinated policy responses, and improve overall effectiveness of SDG-focused reform.
3. Quality-check the cross-sectional data which will be used to operationalize goals and targets in SDG monitoring reports.

Each of the examples below addresses a unique challenge of the SDGs and demonstrates the advantage of having access to longitudinal studies to complement cross-sectional surveys and administrative data.

Example 1: Dynamics of Risk and Achieving SDG Goals Equitably and Efficiently

Another way in which longitudinal research can inform the SDG challenge is to assess the lasting effect of experiencing a given 'state of being' and the ways in which exiting this 'state of being' can be achieved. Differences, by country, in the persistence of poor outcomes for some groups (such as child poverty, malnutrition in childhood, bullying in school, inactivity in youth, etc.), how populations move into and out of such experiences, and their lasting effect (sometimes referred to as 'scarring' – see Scarpetta et al. 2010), will inevitably inform priority setting in country responses to the SDGs, as well as the design of policy interventions to address them.

For example, two countries with similarly low rates of income poverty will respond differently to the problem if in 'Country A' one population sub-group persistently populates this risk factor and in 'Country B' poverty is a fleeting experience for a larger share of the population. These two countries might also want to prioritize the goal of reducing poverty, in among many competing goals, differently. What is evident is that a simple indication of the level, and changes in the level of poverty – as most goals will be operationalized in the SDGs – provides insufficient information on the dynamics of risk to help policymakers design the most appropriate response.

In reality, countries with similar poverty rates in any given year can be experiencing poverty differently. ODI analysis (ODI 2014) of Tanzania, Uganda and Vietnam shows that although these countries all have poverty rates of around 20%, the proportion of the poor living in poverty for at least 2 out of 4 consecutive years has been higher in Vietnam and lower in Tanzania (about 10–12% of total population in the former and 5–6% in the latter). Moreover, although both Uganda and Vietnam have relatively higher rates of persistent poverty than Tanzania, more people were shown to be escaping poverty in Uganda and Vietnam over the period of study. Simply put, analysis of longitudinal data shows the evolution of poverty risks in these countries:

with persistent poverty low in Vietnam, at a risk of increasing, and higher persistent poverty rates in the other countries, showing more promise of reducing. This in itself highlights the challenge of undertaking policy decisions using single annual data snapshots. In this case of Tanzania, Uganda and Vietnam, the result would be that all countries would assume they had similar poverty challenges, requiring similar policy responses, when in reality they do not.

Longitudinal surveys that map changes to well-being across the life course also have the advantage of being able to identify sociodemographic groups in society with a higher or lesser vulnerability to risk. For instance, single-parent families or large families may be likely to experience higher risks of persistent poverty, as might people with lower levels of education. Policymakers with information on which groups are at the highest risk of poor outcomes can focus their interventions and resources on those in need of additional support.

A case in point comes from a Young Lives study of the effects of stunting in early childhood on later stunting in Ethiopia, India, Peru and Vietnam. The study showed that stunting at age 1 predicted around 30–60% of stunting at age 5, and stunting at age 5 predicted around 50–75% of stunting in age 8 (Schott et al. 2013). This type of evidence shows that experiences of well-being at one point in time cannot be used to predict future experiences entirely and indeed point towards an obvious (and often reassuring) conclusion that other life course factors will be influential in children's personal development. To elaborate the point, Schott et al.'s study found that recovery from stunting was also associated with parent's education, household consumption and mother's height (ibid.).

Example 2: Time-Specific Complementarities Across Goals/ Targets and Coordinated Policy Responses

A key purpose of the SDGs is to encourage policymakers to take a broad view to how policy can impact on a wide range of social progress measures for the populations they serve. Yet there is an imbalance between the policies available to governments to achieve the targets and the total number of targets so far proposed for the SDGs. A quick glance at analysis of social protection systems – such as the European Union's MISSOC database or the OECDs Benefits and Wages analysis – shows that the most developed countries are working with around 10–15 mainstream social protection policies shared across a limited number of ministries or departments of government (e.g. Business, Education, Employment, Environment, Health, Housing, Pensions, Social Protection, Transport). The SDGs have agreed a total of 17 goals and 169 indicators.

The imbalance between policy options and the number of targets they should achieve means that effective responses will require much innovation and planning. To do this well, a greater understanding is needed on how targets can complement one another – across sectors and across time – and how policies might be coordinated

to achieve better outcomes most efficiently. To understand how achieving a given goal at one point in time facilitates or inhibits other social progress goals, after controlling for various confounding factors (in other words, to inform what targets should be prioritized in any given context, using which policies, to achieve the greatest improvement across the board), longitudinal surveys and studies are needed (Richardson and Ali 2014).

To open a discussion on the time-specific complementarities of well-being outcomes – and ask the question 'What do we do first?' – forthcoming work from the UNICEF Office of Research-Innocenti (Richardson and Karamperidou 2017) has reviewed over 100 longitudinal studies that been designed to explore links between educational outcomes and other well-being outcomes (e.g. health, material well-being, risk behaviours and so on). After undertaking a meta-analysis controlling for study factors (e.g. country of test, sample sizes, significances, subsampling), the authors' preliminary findings suggest some clear time-related priorities for interventions. In particular, health factors and experiences of neglect and abuse in childhood are significantly more likely to explain a greater variation in educational outcomes in later childhood than material resources, and educational outcomes in childhood are more closely linked to adult material well-being, risk-taking and family-functioning than health outcomes.

Armed with better information of the positive spill over effects of certain interventions for well-being across the life course – aligned to SDG targets mapped to age groups – countries will be able to make their available resources go further. This type of analysis, using longitudinal data, can therefore complement the efforts of other data sources used to monitor and meet the SDG challenge.

It briefly describes some of the key benefits of individual-level longitudinal data. It will also describe key issues in achieving high-quality longitudinal data. These include standardized quality control, minimizing attrition and use of responsive design to maximize efficiency. Individual-level longitudinal data have proven to be extremely powerful resources for science and policy related to human needs, but they are expensive to collect. Because of the effort and expense involved in longitudinal studies, it makes good sense to use them carefully, to accomplish clear and specific goals and to carefully integrate longitudinal studies with other forms of data including censuses, household surveys, registration systems and social media data.

Example 3: Quality Checking Cross-Sectional Estimates

SDG indicators will be operationalized using national estimates of the goals or targets derived from cross-sectional surveys or administrative series. In such series comparisons, countries want to know if the estimates of progress they see are true representations of population experiences (validity and accuracy) and that they can be compared over time and across countries (reliability). Reliability is possible in

the absence of validity, but this requires that all countries, across time, suffer the same degree of inaccuracy in estimation over comparable data rounds.

To inform the work of policymakers in particular, SDG indicators need to be accurate representations of the social progress issues they cover, yet common inaccuracies, such as sampling biases or misreporting by respondents, can lead to country estimates being underestimated or overestimated, giving a false estimation of the position of the country in comparison with itself over time or with other countries. These false estimations could result in inappropriate prioritization of an indicator or issue and, subsequently, poorly designed policy responses. False estimations also risk undermining public trust in initiatives such as the SDGs. Although longitudinal surveys can be susceptible to the accuracy problems seen in cross-sectional data, longitudinal data can be used to assess the validity of cross-sectional sources in some cases, for example, in the case of adult mortality data produced by the sibling survival history (SSH) items in the Demographic and Health Survey (DHS) in Senegal (Helleringer et al. 2014). Helleringer and colleagues selected Senegal for their study because of the availability of the longitudinal Niakhar Health and Demographic Surveillance System, data from which could be matched to the present and historical mortality reporting in the DHS SSH instrument.

Inaccuracy in sibling mortality reporting can lead to under- or overestimates in series of mortality rates in regions that rely on such surveys because of a lack of registration data. Therefore, the purpose of the study's validation test was to assess the extent of reporting errors on sibling survival (age of living siblings, whether sibling was deceased [by gender]) and the extent of rounding of the age (or heaping to nearest multiples of five or ten (ages such as 30, 35 or 40)) of deceased siblings at death by respondents. The authors also used the validation tests to assess a new instrument to collect mortality data from participants: the Sibling Survival Calendar (ibid.).

Results highlighted a tendency for respondents to the SSH instrument to round siblings ages, a tendency significantly reduced by the use of a sibling survival calendar. The new instrument also improved accuracy in reporting female mortality. However, neither instrument improved the numbers of report of false deaths or the accuracy of reporting on male sibling deaths (ibid.). This example of Helleringer and colleagues points to the value of longitudinal data for corroborating information derived from cross-sectional surveys. Moreover, it provides an example of how longitudinal data might be used to validate new instruments proposed for 'filling gaps' in SDG data coverage.

The above examples serve to highlight why overlooking studies of the life course is dangerous for policymaking. In particular, ignoring the life course in policymaking:

- Results in 'guesswork' regarding persistence of experiences in the population and reduces the information available to inform targeted interventions, increasing the potential that 'progress efforts' have to inadvertently create a 'social progress underclass'

- Reduces understanding of complementarities of social progress achievement measures, as well as between policy interventions: limiting the effectiveness and efficiency of interventions, at best, and, at worst, misinforming policy reform resulting in various costs
- Removes an opportunity to quality check 'snapshot estimates' of social progress, risks creating errors in the targets themselves, misinforming policy efforts and undermining trust in social progress initiatives

However, it would be wrong to suggest policymakers ignore life course implications. Instead, it might be more accurate to suggest that they are not being sufficiently informed by surveys and studies that bring life course contexts to the headline social progress estimates: that there is a 'life course evidence gap'.

Final Reflections on Strengthening the Measurement Approach

This chapter has highlighted the value of a life course approach and provided some examples where current SDG measures are unable to capture the complexity and depth of the life course. In applying life course theory to the Sustainable Development Goal agenda, this paper has sought to illustrate the need to look beyond cross-sectional snapshots of data collection, towards a more temporal and holistic framing of the SDGs. This could serve to conceptually strengthen SDG measurement and begin to consider historical time and place, the timing of lives, linked or interdependent lives and human agency as important principles when measuring social progress. We have also shown that life course examinations could point to appropriate entry points or sequencing of interventions.

Critically, longitudinal data provides a unique source of information to fill the gaps for information required to maximize the potential of the SDGs, most notably in understanding 'why', which drivers can impact change and when.

In addition to what is presented in this chapter, longitudinal research could usefully add value in strengthening the measurement approach to inform the SDGs with a focus in a particular number of areas:

- The assessment of structural and social barriers to equity and scaling up services, policy and advocacy outcomes through a determinants analyses
- Examination of what works under what conditions and striking the balance between contextualized knowledge and generalized assessment
- Exploration of the dynamics of multidimensional poverty and inequity with broader and more complex notions of well-being
- Understanding demographic and environmental consequences for individuals, including differences between urban and rural locales and social differentiation and exclusion

- Analysing the impact of policy change on improving lives and enabling factors that promote better policy dialogue
- Generating intergenerational data and knowledge
- Generating the right information at the right time for advocacy, programming and planning and to improve programming decisions

Longitudinal research as a global public good could be better translated and applied to programme and policy design. Findings are too often disconnected from policy platforms, and results tend not to be systematically coordinated with policy and programme decision-making cycles. Many results from longitudinal studies are not widely communicated outside academic and specialist audiences, and weak infrastructure limits effective design and uptake in some countries. Many tend to remain sectoral, with a large focus on health outcomes. Lastly, more is needed to respond to the demand for technical knowledge to design and administer cohort studies in the South, where data gaps are most compelling. Recognizing the potential and acknowledging the need to improve uptake, coordination and impact of longitudinal studies (Dunn and Banati 2015), UNICEF convenes a Global Longitudinal Research Initiative (GLORI), a peer group of over 25 longitudinal studies collecting data on children and their families. Our hope is that the network can provide a meaningful contribution to SDG measurement.

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Chapter 18
Measurement and Monitoring Youth Development Indicators from a Comparative Perspective

Fons J. R. van de Vijver and Jia He

Sustainable Development Goals (SDGs) aim to enable societies to become resource-efficient, sustainable, and wealthy (Griggs et al. 2013). Researchers studying and monitoring SDGs, especially in domains of health, well-being, and quality education from a comparative perspective, face many conceptual and methodological challenges (e.g., Hák 2016; Moran et al. 2008; World Health Organization 2016). We argue that the combination of a culturally sensitive approach and rigorous research methods is crucial in advancing this endeavor. Building on the extensive experience from cross-cultural research in the last decades, a careful design and analysis of data can address various methodological problems in such measurement and monitoring. This chapter assumes a methodological perspective on comparability and validity in data obtained in different cultural contexts, including low- and middle-income countries (LMIC).

We see three related challenges of studies from a comparative perspective. The first is to strike a balance between emic (culture-specific) and etic (culture-comparative) perspectives, which amounts to combining insights, models, theories, and instruments developed elsewhere with culture-informed approaches applicable to LMIC. The second refers to the need to employ a systematic framework to analyze cross-cultural data. Such a framework (i.e., taxonomy of bias and equivalence) is described below. The third is the infrequent usage of test adaptations. These refer

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to an approach in translating instruments in which items from usually a Western-based instrument are scrutinized for applicability in a cross-cultural study involving LMIC. In the remainder, we first describe each of these challenges; we illustrate how related SDG research has dealt with these methodological challenges. Conclusions are drawn in the final part. As this topic cuts across various aspects and goals of the Sustainable Development Goals (SDGs), we present these generic methodological challenges and highlight research in two areas: large-scale assessments and positive youth development (PYD). The first area is chosen because many SDG indicators are gathered from large-scale international surveys such as the Programme for International Student Assessment (PISA) for Goal 4 on inclusive and equitable quality education and promote lifelong learning opportunities for all, where cross-cultural comparability and validity are of vital importance. The second area is chosen, because positive youth development may determine the size, health, and prosperity of the world's future population, which is extremely important to SDG.

On Striking a Balance Between Etic and Emic Perspectives

The tension between etic and emic perspectives stems from psychology. The history of cross-cultural psychology has been plagued by a seemingly endless conflict between two views on cross-cultural differences. On the one hand, there was the emic perspective according to which cultural phenomena need to be studied within their own cultural context, preferably using concepts from the cultures studied (Pike 1967). This so-called *emic* perspective holds that psychological phenomena, such as well-being, depression, and intelligence, to name a few, are intrinsically linked to their context, and hence, cross-cultural comparisons of psychological phenomena are futile. The opposing viewpoint, the *etic* perspective, holds that psychological phenomena are universal (assuming quantifiable phenomena and adequate instruments for their assessments). The emphasis is on cross-cultural comparisons in this tradition. These comparisons could involve the structure of phenomena (e.g., has depression, as measured by the Beck Depression Inventory (Beck et al. 1996), the same structure across countries?) or their means (e.g., which countries score lower or higher on depression, as measured by the Beck Depression Inventory).

The days that the emic and etic perspectives were viewed as incommensurable are largely over (Cheung et al. 2011). The question of which perspective is superior has shifted to the question of their complementarity and conditions of applicability (i.e., when to use which perspective?). We take personality as an example. In the Philippines, indigenous emic research has identified a number of implicit personality dimensions (e.g., Guanzon-Lapeña et al. 1998). Subsequent studies found that most indigenous dimensions could be subsumed in the five-factor model; exceptions were social curiosity, risk-taking, and religiosity (Katigbak et al. 2002). So, the conclusion can be drawn that many personality features are universal; yet, careful analyses of "personality in context" in indigenous studies that compared their findings with the five factors found that these factors were incomplete and did not

cover all locally relevant personality dimensions. Moreover, even for a universal construct like extroversion, different items may be needed in different contexts to assess the construct.

We can draw an important lesson from this literature. First, it is counterproductive to be ideological about the presence or absence of cultural differences and to argue in favor of exclusively emic or etic methods. In their extreme forms, both methods have strong limitations. It is more productive to see how emic procedures can inform etic procedures and the other way around. Second, universality at construct and item level can be very different. Concepts like intelligence and well-being are universal to the best of our knowledge, but that does not mean that their Western-based instruments historically used to capture these constructs are universally applicable. Applied to the present chapter, these conclusions mean that studies of well-being, literacy, numeracy, and other SDG-relevant concepts should start from an informed view on both the universal and culture-specific aspects of the constructs to be studied.

On the Need for Systematically Evaluating Comparability of Data in Cross-Cultural Surveys

Culture-comparative studies can yield data that are not entirely comparable across all countries. For example, educational achievement of 15-year-old students from many countries is compared by asking knowledge questions in PISA, and such data are then used to construct indicators on SDG Goal 4. One of the main concerns in designing the questions is whether students of all countries have had the opportunity to be exposed to the knowledge asked for, in order to get valid and comparable information on student achievement. As another example, we know from cross-cultural studies that individuals in different countries do not use Likert scales in the same manner (e.g., Baumgartner and Steenkamp 2001). Individuals in East-Asian countries tend to use middle responses of a Likert scale frequently, whereas individuals from Central and South American countries tend to use extremes more often. These tendencies could be easily (and erroneously) viewed as genuine cross-cultural differences in PISA constructs such as opportunity to learn and learning motivation with items using Likert scales. We now present a taxonomy of methodological problems of cross-cultural assessments, including the problems with the use of Likert scales, and their implications for the comparability of scores.

Taxonomy of Bias

Based on the source of invalidity, three types of bias, namely, construct, method, and item bias, can be distinguished (Van de Vijver and Leung 1997). *Construct bias* occurs when the construct measured is not identical across cultures or contexts,

either because the concept or the elements as constituents of its measure (e.g., attitudes, behaviors, or cognitions) are not comparable (Van de Vijver and Leung 1997). Take human well-being for example; it has a rich multidimensional nature, comprising objective aspects such as economic, social, political, and gender-related well-being and subjective feelings of well-being (McGillivray 2007); different cultures may place different weights to these aspects, which makes this construct difficult to measure as a single concept and compare across cultures. Furthermore, it has been argued that in individualistic cultures, well-being is perceived to be a personal characteristic, operationalized as the momentary or long-term evaluation of one's life (Kitayama et al. 2000). However, in collectivistic cultures well-being is more associated with embeddedness and belonging; hence, indicators should deal more with satisfaction with relationships. In cases like this, the equal psychological meaning of this construct cannot be established, and one needs to acknowledge the incompleteness of overlap of the construct and only compare the overlapping part of the construct.

Method bias is a generic term for all types of systematic errors occurring in the process of assessment. It can derive from sampling, structural features of the instrument, or administration processes. *Sample bias* stems from incomparability of samples. Cross-cultural variations in sample characteristics can be related to target measures; confounding sample differences could lead to observed score differences in the target measures that do not involve valid cross-cultural differences. In PISA, although the target age range of students is well defined (i.e., 15 years 3 months to 16 years 2 months) (OECD 2015), by the time the assessment is administered, students in specific countries may be at the beginning or end of a semester, which can introduce differences in their achievement scores given the one semester differences in learning time. *Instrument bias* refers to incomparability arising from instrument characteristics. One source of instrument bias as mentioned before is response styles, the systematic tendency to use certain answer anchors on some basis other than the target construct (Cronbach 1950). *Administration bias* can result from different administration conditions (e.g., paper-and-pencil versus online survey, individual versus group administration), unclear instructions, and communication between test administrator and respondents, such as halo effects. In recent PISA cycles, most countries have opted for a computer-based assessments, whereas a few countries still use paper-based assessments, the mode differences should be studied to gauge whether they introduce administration bias and cause undesired score differences across countries (Kuger et al. 2016). *Item bias*, also known as differential item functioning (DIF), indicates that an item has a different psychological meaning in the cultures studied. Technically, an item is biased if persons with the same level of trait or ability, but coming from different cultures, are not equally likely to endorse the item (Van de Vijver and Leung 1997). There are multiple sources of item bias, both linguistic (e.g., poor translation, language features) and cultural (e.g., inapplicability of item contents in different cultures and items with ambiguous connotations). For example, Pan et al. (2008) excluded items regarding religion as a protective factor when studying resilience among Chinese students, because these

items were much less meaningful for this group compared with respondents from cultures that place importance on religiosity.

Taxonomy of Equivalence

Equivalence represents the level of comparability across cultures. Three levels of equivalence are identified (Van de Vijver and Leung 1997). Whereas bias refers to sources of systematic distortions in cross-cultural comparisons that challenge their validity, equivalence deals with the implications of bias for the comparability of constructs and scores. *Construct equivalence* indicates that the same theoretical construct is measured in each culture studied. Construct equivalence is a prerequisite for any cross-cultural comparison in any study; without it, no cross-cultural comparison involving the construct would be valid.

Measurement unit equivalence (or *metric equivalence*) indicates that measures of interval or ratio level have the same measurement unit (metric) across cultural contexts, but they have different scale origins. When measures show metric equivalence, associations of measures can be compared across cultures, but mean scores cannot be compared across cultures.

Full-score equivalence (or *scalar equivalence*) reflects the highest level of equivalence, which means that scales in all cultures studied have the same measurement unit and origin. Observed scores are then free from any type of bias and can be compared directly within and across cultures. When measures show full-score equivalence, analyses of variance and *t* tests to examine cross-cultural differences in means are appropriate for (and only for) this level of equivalence.

To minimize bias and establish equivalence, various procedures before data collection (e.g., extensive field trials, involving cultural experts, standardization in administration) and psychometric procedures after data collection (e.g., factor analysis, DIF analysis) are recommended (for technical details, the reader is referred to Van de Vijver and Leung 1997, or Boer et al. 2018). Large-scale international surveys aiming to monitor SGDs and other studies involving comparisons of aspects of sustainable development are encouraged to follow a systematic check on bias and equivalence before drawing any comparative inferences.

Test Adaptations

We devote a section to test adaptations as it is an emerging practice that is helpful to bridge the gap between emic and etic approaches and ensure equivalence, mainly by optimizing the suitability of instruments in international comparisons or in studies in which instruments, developed elsewhere, are “imported” in a new linguistic and cultural context. Test adaptations are commonly found in two situations. The first happens when tests are prepared for surveys in multiple countries, and in the test

development stage, input from researchers in participating countries is asked to ensure cultural and linguistic appropriateness of items. A good example is large-scale assessments such as PISA (Van de Vijver et al. 2017). Draft items are evaluated in all countries to avoid inadequacy of the items in specific countries. The second type of situation in which items need to be adapted are studies in which an existing instrument is to be used in a new linguistic and cultural context. Examples are intelligence tests, such as the Wechsler scales to assess intelligence, that are translated to new languages; each subtest is then scrutinized to determine whether changes in instructions and/or items are needed.

Close ("literal") translations are no longer the preferred way of rendering instruments in other languages as such translations tend to focus on linguistic aspects, thereby leaving out cultural and psychometric considerations (Harkness et al. 2003; Van de Vijver 2016). Different SDG measurement and monitoring programs from a comparative perspective should go beyond simple close translation of instruments, and the same reasoning holds for instruments and procedures used in interventions. To describe the nature of test adaptations, a classification is proposed here that starts from the four types of equivalence: conceptual, cultural, linguistic, and measurement (see Table 18.1). Within each type there are two subtypes, thereby defining eight kinds of adaptations; related classifications can be found in Harkness et al. (2003) and Malda et al. (2010).

A concept-driven adaptation is a change of the contents of a question, to accommodate differences in the indicators of culture-specific concepts, such as Christmas as a religious symbol or the use of January 1 as the start of a new year.

Theory-driven adaptations are instrument changes due to theoretical reasons. An instrument that has questions with a strong theoretical basis may require extensive adaptations in order to have items that still comply with the theory. Malda et al. (2010) wanted to administer an American short-term digit memory test among Kannada-speaking children in India. The children had to repeat a series of digits, read aloud by the test administrator at a rate of one digit per second. The English version has only one-syllable digits. This choice is based on Baddeley's (1992) phonological loop model, according to which the number of items that can be stored in working memory depends on the number of syllables that can be repeated in about 1.5 s; so, more items can be recalled when these are shorter, and the test will be more sensitive when shorter digits are used. All digits in Kannada from 1 to 10 are bisyllabic, except 2 and 9, which have three syllables. Therefore, the original items were changed so that all items in the beginning had two-syllabic digits (thereby maximizing the sensitivity of the test), while three-syllabic digits were only introduced late in the test.

The two culture-related adaptations refer to "hard" and "soft" aspects of culture. Terminological/factual-driven adaptations refer to country-specific aspects that are unfamiliar elsewhere. An example is the use of currencies (e.g., dollars or yen) or nonmetric or metric measures (gallons or liters) in PISA numeracy texts in different countries. Norm-driven adaptations are used to accommodate cultural differences in norms, values, and practices. An item about a child helping to do the dishes after dinner requires a specific cultural context that may not apply in all countries.

Table 18.1 Types of instrument adaptations

Domain	Kind of adaptation	Description and example
Concept	Concept-driven adaptation	Adaptation to accommodate differences in concept in different cultures (e.g., knowledge of name of a widely known public figure in a country)
	Theory-driven adaptation	Adaptation that is based on theory (e.g., tests of short-term memory span should use short stimuli in order to be sensitive, which may require the use of different stimuli across cultures)
Culture	Terminological/ factual-driven adaptation	Adaptation to accommodate specific culture or country characteristics (e.g., conversion of currency)
	Norm-driven adaptation	Adaptation to accommodate cultural differences in norms, values, and practices (e.g., avoidance of loss of face)
Language	Linguistics-driven adaptation	Adaptation to accommodate structural differences between languages (e.g., the English word "friend" can indicate both a male and a female person, whereas many languages have gender-specific nouns for male and female friends)
	Pragmatics-driven adaptation	Adaptation to accommodate conventions in language usage (e.g., level of directness of requests by interviewers)
Measurement	Familiarity-/ recognizability-driven adaptation	Adaptations that result from differential familiarity of cultures with assessment procedures for specific stimuli (e.g., use of differential pictures of objects, such as pictures of houses)
	Format-driven adaptation	Adaptation to formats of items or responses (e.g., adaptations in response scales to reduce impact of extremity scoring)

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The distinction between "hard" and "soft" also applies to linguistic applications. ("Hard") linguistics-driven adaptations refer to specifics of languages that cannot be translated. For example, the English "you" can refer to any person word and can be used in any interaction. However, many languages, such as French and German, make a distinction between an informal mode of address that is used in interactions in which there is no power differential or by a person higher in rank to address a person lower in rank and a formal mode. Both modes have their own words to address another person.

Pragmatics-driven adaptations refer to culture-related conventions in language usage, such as discourse conventions. Good examples can be found in the extensive literature on politeness and (in) directness of requests (e.g., Brown and Levinson 1987).

The two kinds of measurement-related changes involve different aspects of instruments. The first, familiarity- and recognizability-driven adaptations, are due to differential familiarity of cultures with assessment procedures for specific stimuli. These adaptations are common in cognitive tests. For example, in international

comparisons of educational achievement such as PISA, it is important to compare curricula and topics treated before administering instruments to ensure that students in all countries have been exposed to the topics assessed.

Finally, format-driven adaptations are typically used to minimize or avoid unwanted cross-cultural differences that are due to item formats. For example, differences in extreme response style (i.e., the tendency to overuse the end points of a Likert scale) may be reduced by using more options in Likert-type response scales. Acquiescence (i.e., the tendency to always agree rather than disagree) effects may be avoided by having both positive and negative items (e.g., in a motivation test, half of the items can be formulated where the agreement implies motivation, and half of the items can refer to lack of motivation).

Methodological Themes in Published Literature

In this section, we present methodological issues in published studies and overview, linking these to the methodological framework described before. Three themes are discussed: (1) etic studies, (2) emic studies, and (3) studies using test adaptations.

Etic PYD Studies

Several studies have been published in which PYD aspects are compared across ethnic groups or countries, with the aim of establishing comparisons between groups and countries. These studies face three types of challenges. The first is that equivalence is often not tested. Even carefully conducted studies that pay much attention to design and analysis often do not address the question of comparability (e.g., Escueta et al. 2014; Lim et al. 2017; Ravens-Sieberer et al. 2008). It is common to simply assume full comparability of data; after an inspection of internal consistencies, scores are compared in analyses of variance or *t* tests. These latter statistical procedures assume scalar invariance (among other things, implying the appropriateness of all items in all countries and the lack of differential item functioning). If untested, these tests of mean scores are not necessarily incorrect, but it is impossible to confirm that the comparisons are well grounded if equivalence is not tested. Many cross-cultural PYD studies fail to test for invariance, which challenges their comparability. This problem is easy to resolve; various statistical packages are available to test equivalence. Many comparative projects work with scales that are unidimensional. Confirmatory factor analyses can then be used to establish invariance. As an aside, it may be noted that these invariance procedures can also be used to examine the invariance of measures in longitudinal designs. If the ages of assessment differ considerably, the question can be asked to what extent the measures of a study still assess the same constructs in all waves. This temporal stability of the measures can be examined using invariance procedures.

A second challenge is the underutilization of advanced statistical procedures to enhance the inferences derived from PYD studies. We describe some remarkable exceptions here of studies that use state-of-the-art statistical procedures, both dealing with longitudinal designs. The first is a study by Jelicic et al. (2007) which tested Grade 5 and 6 students in the United States to establish whether PYD in Grade 5 predicted youth contributions and risk behaviors and depression in Grade 6. Structural equation modeling and random regression effects were used to confirm the expectations. PYD in Grade 5, measured by the 5Cs (i.e., competence, confidence, connection, character, and caring or compassion), predicted higher youth contributions and lower-risk behaviors and depression at Grade 6. Smith et al. (2017) were interested in the link between afterschool programs and PYD. They used multilevel modeling to demonstrate that various program characteristics were associated with PYD, notable for African American youth. Sophisticated statistical procedures are available nowadays to compare adaptations (i.e., combinations of emic and etic items) across cultures, leaving both the emic and etic aspects intact; examples are item response modeling and structural equation modeling in which invariance is tested only for the etic items and the emic items are analyzed to address their links with the etic items (e.g., Van de Vijver and Leung 1997).

The third challenge involves the lack of validated measures of PYD that can be used in a wide variety of cultural contexts. Particularly in studies of very different cultures, it is difficult or even impossible to find measures that have shown good psychometric properties in all contexts. Patton et al. (2010) mention the example of a missing measure of adolescent health that can be used in large-scale PYD studies; the lack of good measures is very broad and often keenly felt in studies including LMIC. The emphasis on Western instruments in large-scale surveys is understandable yet regrettable. Adequate invariance tests may resolve part of the problem by showing that an instrument works well (or does not work well) in all countries of a study; yet, there is usually no guarantee that the Western instrument is the best possible instrument in a new context.

Emic PYD Studies

In the last decade, various emic studies of PYD have been published. Not all these studies were conducted with the rigor of many of the etic studies. Still, the studies that were published show the local potential and relevance. The studies with the clearest demonstrations of the value of emic studies were capable of capitalizing on culture unique features in PYD programs. For example, Kenyon and Hanson (2012) refer to the use of cultural and spiritual aspects of programs to prevent suicide (e.g., traditional sweat lodge, storytelling) among American Indian/Alaska Native Youth. In another example, Wexler (2014) studied resilience in an indigenous Arctic community. Many members of the community have undergone abuse, trauma, and discrimination. She examined which cultural factors could be used to enhance

resilience, notably by investigating how people could establish a strong sense of identity and belonging to their culture in these hardships.

Validation is often the Achilles heel of emic studies. Such studies are often aimed at identifying critical factors to foster well-being of PYD. After the identification of these factors, there is often less attention for validating the findings and interpretations. From a methodological perspective, these studies are often good building blocks for developing programs, but the next step, showing that a program built on these emic elements works well by common psychometric criteria, is often lacking. This shortage does not imply that emic knowledge should not be used; quite on the contrary, the emic studies described here would provide excellent input for local PYD programs; what is missing is the last part in the development of such programs: their validity should be demonstrated. Shek and Yu (2011) complained that few validated PYD programs were available for Asia, but it seems that their complaint applies to many non-Western countries, notably LMIC. In PYD programs with a strong applied perspective, it is easy to lose sight on the need to validate measures, notably when such measures were not available prior to the study and all stimulus materials needed to be locally developed. In an interesting exception to this lack of validated emic measures and programs, Shek et al. (2007) describe the development and validation of the Chinese Positive Youth Development Scale. The authors started from an inspection of the Western literature and local Chinese literature to identify aspects of PYD (in line with our recommendation to combine etic and emic aspects). They proposed 15 constructs constituting PYD, such as bonding, resilience, various competences (social, emotional, cognitive, behavioral, and moral), and positive identity. Items were mainly derived from existing Chinese scales. The scale was administered to two groups of adolescents, one group was well adjusted, while the other was poorly adjusted (groups were split on the basis of behavioral problem indicators). The scale showed an acceptable internal consistency and was able to discriminate the two groups. The scales were positively related to thriving, life satisfaction, and perceived academic achievement.

Emic studies are not aimed at finding patterns that can be generalized across cultures but to provide insights, measures, and programs that are optimized for a specific context. Some psychometric considerations we mentioned before do not apply to emic studies, such as the demonstration of equivalence; however, as the study by Shek et al. (2007) demonstrates, other psychometric considerations, such as internal consistency and validity, also apply to emic (quantitative) studies.

Balancing Etic and Emic in PYD Considerations: Adapting Test Materials and Interventions

Ungar (2011) refers to cultural relativity as one of the constituting elements of PYD research by arguing that the "process of positive growth under stress are both culturally and temporally (and therefore, historically) embedded" (p. 8). What does that mean? It could easily be interpreted as referring to a plea for emic studies; the term cultural relativity has indeed been used in cross-cultural psychology as referring to the context-bound nature of all psychological processes (Berry et al. 2011). However, in our view, cultural embeddedness means here that processes of growth take place in a specific cultural and historical context, which means that there is a unique set of contextual and historical conditions impinging on this growth. However, it does not mean that processes underlying growth are incomparable across contexts but that we need to understand the links between contextual and historical conditions and personal growth. For example, studies in LMIC can inform us what it means to grow up in resource-restricted environments. So, in our reading, Ungar's statement can be interpreted as striking a balance between etic and emic components of PYD. What sets studies in LMIC apart are the specific contextual conditions of these countries.

Test adaptations are an interesting application of this attempt to combine etic and emic aspects of PYD. The PYD literature has interesting examples of adaptations. We do not describe standard test adaptations; examples of these can be found in Hambleton et al. (2005), Malda et al. (2010), and Van de Vijver (2016). Rather, we briefly describe adaptations of intervention programs. We argue that the same considerations of striking a balance between etic and emic aspects apply to adaptations of interventions. Pryce et al. (2011) designed a youth mentoring program in India. They found that one-to-one mentoring that is usually employed in Western countries did not work well in their Indian context. However, mentoring in a group worked well; in the words of one of the participants: "Different people have different feelings… so [working in groups] helps us understand the other person" (p. 56). The authors also reported that it was better that the groups did not meet often as participants had to come from different places and local transport took a long time, often including taking different buses and walking for a few kilometers. This study is interesting as it showed that the basic ideas of the mentoring did not need to be adapted but that the mode of delivery had to be adjusted. Karcher and Santos (2011) discuss the transferability of the U-based Cross-Age Mentoring Program (CAMP), a highly structured, developmental mentoring program for adolescents and youth, to East Asia. The authors pay particular attention to the question of whether connectedness in the Western sense (i.e., family, academic, and social connectedness) would work the same way in the more collectivistic societies of East Asia. CAMP emphasizes the reciprocal link between the individual adolescent and others as the core of connectedness. The authors argue that this idea can be expected to travel well to East Asia with its emphasis on relational aspects. Kieling et al. (2011) provide a good overview of adaptations in interventions aimed to prevent child and adolescent

mental health issues in LMIC, including promoting ownership of the intervention by the community (e.g., by inclusion of key stakeholders in the design or choice of the intervention), the use of evidence-based interventions with inbuilt cultural flexibility (e.g., the use of interventions that build on existing practices and strengths), and the integration of interventions into existing services and use existing staff to promote sustainability by integrating interventions into school settings, health-care services, social services, and community services.

Conclusion

The study of youth development in LMIC is a fledgling discipline. In our reading of the literature, there is a regrettable paucity of data, but there is also a lack of appreciation of "the bigger picture." Blindly importing Western instruments in LMIC is bad practice (as the measures may lack cultural sensitivity and appropriateness), but there is no need to reinvent the wheel when dealing with new cultural contexts either. From a methodological perspective, new studies should strike a balance between emic and etic aspects. There is a rich literature on methodological tools available to help these endeavors. We appreciate that it is easy to abandon strict scientific rigor when working in difficult field conditions; yet, we argue that cultural relevance and scientific rigor are key aspects in study quality, also if the field conditions are not conducive to maintaining rigor. We described the most important of these tools in the present chapter. Hopefully, the present chapter will contribute to establishing quality standards in studies of SDG in LMIC.

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Chapter 19
Methodological Issues in Research on the Sustainable Development of the Next Generation

Margaret Burchinal and Martine Broekhuizen

The success of the United Nation's Sustainable Development Goals will depend, in part, on the degree to which high-, middle-, and low-income countries implement effective social, environmental, and legal policies (Raikes et al. 2017). This chapter discusses methodological issues that determine the extent to which researchers and evaluations assist practitioners and policy-makers by creating and determining whether programs and practices are effective. Sophisticated analysis of large datasets from UN organizations, government registries, and large within- and between-country studies provides practitioners and policy-makers with approaches to addressing social and environmental issues and evaluation of the effectiveness of existing programs and practices. Through identifying which programs and practices are effective for whom to address issues of sustained development for the next generation, researchers can assist practitioners, and policy-makers make decisions about which programs should be implemented. In this chapter, we focus on early childhood education (ECE) in providing examples of studies that use different statistical methods because this is our area of expertise, but these general issues apply to other social issues (e.g., health, poverty, education, migration, gender) and environmental issues (e.g., climate change, water, ecosystems).

Sustainable Development Goals (SDGs) represent a global consensus of U members of 17 goals and 169 targets that should support child and youth development across the world (Raikes et al. 2017). Meeting these goals involve generating knowledge of "development in diverse contexts, monitoring and measurement to reveal patterns of success and inequity, and building capacity for developmental sciences

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in all countries" (Raikes et al. 2017, p. 1). Research within the context of the local culture is critical to developing and determining the effectiveness or policies and practices designed to meet these goals and targets for the children in that context (Kaur and Saraswathi 1992).

Research and evaluation must be both internally and externally valid in order to contribute to and evaluate policies and practices that promote the SDGs. "Internal validity" refers to the extent to which causal conclusions can be drawn from a study. "External validity" refers to the extent to which findings from a study can be generalized from the sample to the population. Sophisticated research designs and analytic methods can reduce concerns about studies and can draw causal connections between practices and outcomes, and careful sampling and measurement will allow the generalization of findings from the study sample to the children in that culture.

This chapter provides examples from ECE research to illustrate methods that address internal and external validity. Target 4.2 states that all children should have access to high-quality early childhood education (ECE). Prior research has demonstrated that high-quality ECE may be one of the most effective means for reducing economic and racial gaps in school readiness throughout the world (Heckman 2011). Investing in ECE appears to be beneficial not only for the children who attend but also for the economic and social health of communities for low-, middle-, and high-income countries. Such evidence has contributed to an expansion of compensatory preschool services for low-income children funded by federal and state governments in almost all countries (Burchinal et al. 2015; Kaur and Saraswathi 1992).

Threats to Internal Validity

Concerns about internal validity arise in almost all research studies of social and environmental issues. The lack of social justice in access to social and environmental assets within almost all cultures makes it difficult to make causal conclusions about programs and policies addressing these issues. For example, children who have access to more and higher-quality ECE also tend to have parents with more education, income, and more sensitive and responsive parenting practices (Berlinski and Schady 2015; Burger 2010; NICHD ECCRN 2005). This "family selection bias" raises questions when correlational studies show that high-quality ECE is related to higher cognitive and social skills because those other advantages could account for better outcomes among children in higher-quality ECE (Duncan and Magnuson 2013a).

Fortunately, there are statistical approaches address potential threats to internal validity due to selection bias with varying levels of rigor. These methods are discussed next, starting with the least rigorous approaches and ending with the most rigorous methods. The first set of statistical methods include characteristics of the child and family as covariates selected because they account for possible alternative explanations for hypothesized ECE effects. The second set of statistical methods,

quasi-experimental approaches, provides stronger protections against drawing incorrect conclusions due to these "third-party variables" or selection factors. They include propensity score analyses, fixed effects, differences in differences, and regression discontinuity designs. The last set of methods, experimental designs that randomly assigned children to ECE conditions or to a control group, provide the most rigorous protection against selection bias. Each of these statistical approaches are described below, along with examples of their use in studies of ECE – although they are applied in studies of all social and environmental issues.

Methods that Use Covariates

Multilevel Regression – Accounting for Potential Confounding by Including Covariates Many initial exploratory studies study the association between programs and practices and children's outcomes with little attention to alternative explanatories or nesting of children in programs. The findings from these studies can provide an important first step in identifying potential programs and practices but cannot determine whether those practices changed outcomes due to selection bias issues.

Researchers often include many covariates in their analyses to address concerns that they represent potential alternative explanations for associations between the program or practice of interest and children's outcomes. These analyses reduce concerns about selection bias compared to analyses without covariates but make very strong assumptions when used to determine whether and how much those programs or policy change child outcomes. This approach assumes that all possible alternative explanations are represented in the covariates – and they are represented correctly (e.g., the true association is linear when a continuous variable is entered, and there are no interactions between that variable and any other variable). It is extremely unlikely these assumptions are met, so this approach should not be regarded as providing causal evidence regarding the effectiveness of programs or practices.

Use of multilevel models, along with covariates, also corrects for potential problems with studies of children in programs which can also bias conclusions. When children attend the same program, their shared experiences of that program make their outcomes correlated. Failure to represent these correlations in the analysis can result in drawing incorrect conclusions from analyses (Bryk and Raudenbush 1987).

The ECE literature demonstrates why addressing concerns about selection bias is necessary. The first ECE studies drew opposite conclusions, with one set of researchers concluding that higher-quality ECE benefits to children's cognitive and social development (Clarke-Stewart 1989; McCartney 1984) and another set of researchers concluding that ECE, especially during the first year, harmed children's social development (Belsky and Rovine 1988). Without considering family characteristics and other possible explanatory or methodological factors such as the nesting

of children in child care programs (Bryk and Raudenbush 1987), it was not possible to resolve the apparent contradictions in these studies.

ECE research studies, beginning by 1990, included measures that were indicators of social class (e.g., maternal education and poverty status), and studies often included measures of the quality of parenting. In addition, these studies used statistical methods such as hierarchical linear models to account for the grouping of children in ECE settings, with models of the general form,

Level 1 – child level:

$$Y_{ij} = \pi_{0j} + \pi_{1j}\left(\text{child and family characteristics}_{ij}\right) + \varepsilon_{ij}.$$

Level 2 – setting level:

$$\pi_{0j} = B_{00} + B_{01}\,\text{child care quality}_{j} + B_{02}\left(\text{program characteristics}_{j}\right) + \zeta_{j}.$$

$$\pi_{1j} = B_{10}$$

where:

Y_{ij} is the child outcome for the i-th child in the j-th setting.
π_{0j} is a vector of the random intercepts for the j-th setting for each individual.
π_{1j} is the vector of fixed-effect parameters for the j-th setting for selected child and family characteristics.
B_{01} is the fixed-effect parameter for child care quality or time in child care.
B_{02} is the fixed-effect parameter for program characteristics.
B_{10} is the fixed-effect parameters across settings for selected child and family characteristics.
ε_{ij} is the random error term of the i-th individual in the j-th setting.
ζ_{j} is the random error term of the j-th setting and is assumed to be independent of ε_{ij}.

At the first level, the model describes developmental change over time for each child as a function of child and family characteristics. At the second level, the model asks the extent to which children's development is related to child care characteristics – after adjusting for the child and family covariates included in the level 1 model and the program characteristics included in the level 2 model.

A recent study used this approach to examine associations between ECE quality and child outcomes in China (Li et al. 2016). In China, most 3- to 6-year-olds are enrolled in ECE programs. Li and colleagues sampled 178 child care centers in one large southeastern province to represent use of ECE in that province. They measured the quality of the preschool classrooms and measured child outcomes for 1012 3- to 6-year-olds. They developed a Chinese measure of ECE quality and included several Chinese measures of child outcomes. Multilevel analyses included the child's age and gender, mother's education, and whether the program was a public center and was in an urban setting. Findings indicated children in higher-

quality programs scored higher on the measure of language skills (effect size = .15, $p < .01$), math skills (effect size = .16. $p < .01$), and social cognition (effect size = .13, $p < .10$). These analyses suggested that enrollment in higher quality ECE programs led to higher skills in a representative sample of Chinese children in this province but provide limited protection against selection bias related to more privileged parents enrolling their children in higher-quality programs.

Multilevel Regression – Accounting for Potential Confounding by Including Pretest and Covariates Including a baseline measure of the outcome as a covariate further decreases selection bias because it will account impact of the child, family, and cultural factors on that child's skill at entry to the program. These "value-added" approaches can greatly decrease selection bias accordingly. These approaches assume the program being evaluated has the same impact on all children regardless of their initial skills or background characteristics, and testing this assumption is an important part of using this approach. Within the ECE literature, "value-added" analyses are now the standard for evaluating program effects. The general model described above is modified to add the baseline score as a covariate, as shown below,

Level 1 – child level:

$$Y_{ij} = \pi_{0j} + \pi_{1j} Y_{ij(t-1)} + \pi_{2j} \left(\text{child and family characteristics}_{ij} \right) + \varepsilon_{ij}.$$

Level 2 – setting level:

$$\pi_j = B_{00} + B_{01} \,\text{child care quality}_j + B_{02} \left(\text{program characteristics}_j \right) + \zeta_j.$$

$$\pi_{1j} = B_{10}.$$

$$\pi_{2j} = B_{20}.$$

where:

$Y_{ij(t-1)}$ is the score on the outcome measure prior to entry into that child care setting for the i-th child in the j-th setting and π_{2j}.
B_{20} is the coefficient for the lagged outcome measure.

An example of a study in which the analyses examined the extent to which the quality of teacher-child interactions predicted gains in child outcomes was a study of public preschools in Chile (Leyva et al. 2015). The public preschools provide high quality ECE within the context of Chilean culture. Public kindergarten classrooms in Chile's capital were selected to represent the neighborhoods in Santiago with high proportions of low-income children, resulting in a sample of 91 classrooms serving 1868 4- to 6-year-old preschoolers. Classroom quality was measured with observations using a widely used measure of classroom quality that was adapted and validated for use in Chile. The study children's academic and executive

functioning skills were tested in the fall and spring. HLM analyses of the spring scores accounted for the nesting of children in schools and included the child's fall score on that measure and teacher characteristics as covariates. These analyses indicated that children had higher math and executive functioning skills when their teachers provided more emotional support; higher language, math, and executive functioning skills when classroom management was more positive and organized; and higher executive functioning skills when teachers provided more instructional support.

Quasi–experimental Methods

The use of the covariates and pretest increases confidence in the findings related to ECE, but none of these approaches is able completely to disentangle ECE and the family and child characteristics. Economists have developed a wide range of statistical approaches that account for either observed covariates or both observed and unobserved covariates when assumptions are met (Winship and Morgan 1999), and many of these approaches are becoming widely used to account for potential confounding in observational studies. Most of these approaches involve two-stage analyses that attempts to remove the selection bias in the "treatment" variable in the first stage and then examine associations between the "cleansed treatment" variable and child outcomes. These approaches should greatly reduce concerns that alternative explanations could account for observed effects but reduce power and therefore make it more difficult to detect modest-to-moderate impacts on child outcomes.

Propensity Score Analyses (PSA) This econometric method should account for bias due to observed baseline variables by seeking to identify individuals who are similar on selected baseline characteristics. As such, PSA only accounts for potential differences on the selected baseline characteristics and does not account for other potential explanations. The dimension of interest (labeled the "treatment" within this approach) is analyzed in the first stage typically using a logistic regression, which can be a multilevel analysis. The "treatment" is typically a categorical variable, (e.g., high-quality ECE defined by whether a classroom's quality score is in the high-quality range). This treatment variable (e.g., whether high-quality ECE or not) is analyzed using logistic regression as a function of baseline characteristics. Ideally, this list includes the child's entry skill levels as well as family characteristics such as parental income and education. The predicted scores for each individual from this logistic regression are used to create matches or weights. Matching involves identifying the "treated" and "control" individuals with similar predicted scores – typically using a nearest neighbor or caliper algorithm (i.e., methods that define how similar individuals have to be a match). Matching can involve linking a single "treated" individual with multiple "control" individuals to increase precision or to a single individual to increase the number of individuals with matches. Analyses of the child outcomes then either only include the matched individuals or all individuals

in models that include weights created from the propensity score. These weights place more emphasis on the individuals who had the largest predicted values in the logistic regression (i.e., at recruitment, they looked most like individuals who received treatment) and less emphasis on those with smaller predicted values. It is assumed that PSA matching or weighting has removed the differences between the "treatment" and "control" group, so it is essential that comparison of treated and control group means on the baseline comparisons be conducted using the matched or weighted samples. These comparisons should indicate that less than 10% of variables after matching or weighting show substantial differences (e.g., effect sizes of .1 or less).

An excellent example of the use of PSA in examining ECE impact is a study that examined whether entry to child care during infancy impairs socio-emotional development in Norway (Dearing et al. 2015). Concerns that children who begin full-time child care during infancy show higher rates of problem behaviors arose (McCartney et al. 2010), but most of this research involved using covariates to account for selection bias. Dearing et al. (2015) used longitudinal data from the Behavior Outlook Norwegian Developmental Study to examine 939 children from 6 months to 4 years. ECE teachers' ratings of children's aggression at 2, 3, and 4 years were compared for three groups: children who entered child care before 12 months, between 12 and 17, and between 8 and 24 months of age. The first stage of the analysis was an ordinal logistic regression predicting the age-of-entry group from family and child characteristics collected when children were 6 months such as maternal education, maternal distress, whether both parents are in the household, immigrant status, poverty, child gender, and activity levels. Propensity weights, created from this analysis, were applied to all analyses. Hierarchical linear models accounted for nesting of children in classrooms. Results indicated that children who entered child care earlier tended to have higher levels of aggression at 24 months but showed marked declines in aggression over time such that the age-of-entry groups were not different at 4 years of age.

Sibling Fixed Effects The PSA provides some protection against pre-existing differences on observed variables, but not on variables not included in the analyses. Other approaches promise more protection given certain model assumptions. The most widely used of these approaches is the sibling fixed-effect approach. This approach involves finding sibling pairs in which one sibling experienced the "treatment" of interest and another sibling did not. This approach assumes that change in access was the reason families accessed the program for one sibling and not the other sibling (e.g., introduction of prekindergarten programs in the area after the older child was too old to attend). It assumes it was not because of differences in parent perceptions of their children (e.g., they thought the "treated" child would benefit more). Based on these assumptions, then comparisons of the two siblings should provide an estimate of treatment impact unbiased by family characteristics. It should be noted that this approach still allows for bias related to systematic individual differences among children within families, especially if those differences interact with the treatment resulting in differential treatment impacts.

One of the most widely cited ECE studies that employed sibling fixed effects evaluated the long-term impacts of Head Start using the National Longitudinal Survey of Youth. Deming (2009) compared sibling pairs in which a younger sibling attended Head Start and the older sibling did not, presumably because the Head Start program expanded in their area after the older child would have been eligible to attend. Results indicated that, compared to the older sibling, the sibling who attended Head Start had higher levels of educational attainment and employment and lower levels of criminal records and teen pregnancy as young adults. Analyses included the child's skill levels at 3 years (i.e., prior to Head Start eligibility) and other child characteristics. Effect sizes were moderate (d~ .20). By looking at differences between siblings using the fixed-effect analysis, Deming was able to infer that Head Start, not the family characteristics, accounted for the improved adult outcomes.

Differences in Differences This approach is widely used among economists because it attempts to mimic an experimental design using observational data by comparing the differences in change over time between two groups ("treated" and "control") in a natural experiment. This approach assumes "parallel trends." That is, that the "treated" and "control" groups would show the same change over time if the "treated" group had not received the treatment and that it was the treatment and nothing else that causes differences in observed change between groups.

A recent study used the differences in differences (DiD) to examine the impact of a universal high-quality preschool program for Spanish 3-year-old (Felfe et al. 2015). Spanish provinces differed in the speed at which this program expanded to create places in the programs for 3-year-olds. They tested whether other things changed with the expansions, such as movement from lower-quality centers to the new program, and determined whether the expansion largely reflected children moving from exclusive maternal care to the new universal program (and thereby addressing the assumption regarding other possible changes associated with the "treatment"). Comparisons of child outcomes before and after the reform in provinces with high versus low expansion rates indicated that the universal program led to an improvement in reading skills at age 15 years (effect size = .15) and a reduction in grade retention in primary school (2.5% lower). A follow-up analysis used this study to estimate the cost and benefits of ECE (van Huizen et al. 2016), yielding estimates of about 4 Euros of benefits per Euro spent on the universal ECE program for 3-year-olds.

Regression Discontinuity The regression discontinuity design (RDD) allows causal conclusions to be drawn in evaluations of programs when there is a single rule that determines who does and does not receive the treatment. If this rule is applied without exception and the pattern of the association between that factor and the outcome is correctly represented in the analysis, then causal conclusions can be drawn because you know exactly why any individual did or did not receive the treatment. In reality, this criterion is difficult to meet because few programs have a single rule that determines eligibility with no exceptions.

The RDD has been widely applied in evaluations of prekindergarten (pre-K) programs in the U because the child's age at entry to primary school determines whether they are eligible to enter in a given year. You can compare the outcomes of children who are very similar in age but who were either just a little too young (and are just entering pre-K program) or just barely old enough to enter the year before (and have completed the pre-K program and enter primary school). The general model is shown below.

Children who just completed the pre-K program to enter primary school as young 5-year-olds are viewed as the "treatment" group, and their scores at entry to kindergarten are examined as "posttests." Children from the same birth cohort who entered pre-K a year later as older 4-year-olds constitute the "control" group, and their scores at entry to pre-K are viewed as "pretests." Analyses look at the association between age and child outcomes and fit different lines for the treated and control groups. Selection factors should be comparable for the two groups of children because all of their parents were eligible for and successfully enrolled them in the prekindergarten program – and the difference in birthdates was the factor that determined who entered kindergarten in which year. RDD requires carefully examining whether this rule was violated in several ways. First, it must determine whether, based on the eligibility rule, there are children should have, but did not, receive the treatment and whether there are children who did, but should not, have received the treatment. Second, it involves asking whether differential attrition exists. This could easily result because the treated group had to persist in their treatment to its completion, whereas the control group either did not receive or is just entering the treatment. Third, it involves checking if the rule used to determine who received the treatment and who did not is represented correctly in the analysis model. For example, the figure above shows a linear relationship between age and outcome, but it is important to test empirically whether the relationship with age for both groups in linear or whether it needs to be represented as a nonlinear association with the child outcome.

One of the most widely known RDD ECE studies involves the evaluation of the Boston prekindergarten program (Weiland and Yoshikawa 2013). The Boston schools created a program implementing some of the most promising ECE practices. Comparisons of about 2000 children who had either just entered or just left the program were conducted. They tested the assumptions. The rule for "treatment assignment" was not a problem because few children entered primary school early or were held back in pre-K. The form of the age-outcome association was proved to be a linear, not nonlinear. Differential attrition, however, was a problem. Greater attrition occurred among the group who completed pre-K than in the group entering pre-K, so they conducted a propensity score analysis to eliminate this bias. The PSA created weights reflecting the baseline characteristics of the children who completed their pre-K year compared to those who dropped out of the pre-K program. Using the propensity scores as weights in their RDD analysis of child outcomes, they eliminated the impacts of differential attrition. Findings revealed moderate to large impacts on language, reading, and math skills (d ~ .8) and small impacts on

executive functioning skills (d ~ .2). Larger impacts were found for Hispanic and Black children, dual language learners, and children from low-income families.

Instrumental Variables One of the more rigorous methods for dealing with selection bias involves using instrumental variables. The goal is to identify a variable (the instrumental variable or IV) that is related to predictor of interest (e.g., child care quality) and not related to the outcome (e.g., the child's language skill) and to factors that influence that outcome, and that selected IV has its impact on the outcome exclusively through the predictor of interest. If such variables can be identified, then the IV analysis can use this variable to provide unbiased analyses of program or practice impacts on child outcomes (Angrist and Keueger 1991, 2001). To find an appropriate IV, a two-stage analysis is conducted. In the first stage, the predictor of interest is analyzed as a function of the instrumental variable. The predicted values from this analysis are used in the second stage in analyses of the outcome of interest inside of the predictor of interest. The general model is shown below.

Stage 1 model:

$$X_{ij} = B_{01} + B_{11}\, IV_{ij} + B_{21}\, \text{covariates} + e_{ij}$$

Stage 2 model:

$$Y_{ij} = B_{02} + B_{12}\, \text{Predicted}\, X_{ij} + B_{21}\, \text{covariates} + \zeta_{ij}$$

where:

X_{ij} is the predictor of interest for the i-th individual in the j-th group.
IV_{ij} is the instrumental variable for the i-th individual in the j-th group.
Y_{ij} is the outcome of interest for the i-th individual in the j-th group
predicted X_{ij} is the predicted value for that individual from the stage 1 model.

Until recently, this approach had been of limited value for examining child care because it was so difficult to find instrumental variables with moderate to strong relationships with child care characteristics that were unrelated to child outcomes. An excellent example involves the earlier discussed Norwegian study examining age of entry to infant child care (Dearing et al. 2015). In Norway, toddlers tend to enter child care when the 12-month parental leave ends, but most programs allow toddlers to enroll in August. As most parents do not enroll their children until their leaves have ended, children born in July, August, September, and October are likely to enter at younger ages, and those born later tend to enter at later ages. They used month of birth to estimate an estimate of an age-of-entry variable that is unrelated to child outcome. The first stage analysis predicted age of entry from month of birth given certain covariates,

$$\text{Age} - \text{of} - \text{Entry}_{ij} = b_{01} + b_1 \text{Month} - \text{of} - \text{birth}_j + b_{21}\, \text{Covs}_{ij} + e_{ij}.$$

The second stage used the predicted values from that first stage to represent age of entry in the analysis of child outcomes.

$$\text{Achievement}_{ijk} = b_{02} + b_{12}\,\text{Predicted Age} - \text{of} - \text{Entry}_{ij} + b_{22}\text{Covs}_{ijk} + \zeta_{ijk}.$$

Similar findings were obtained as in the propensity score analysis, suggesting that initial differences at 24 months disappear by 4 years of age.

Experimental Studies

Experimental studies, in theory, protect against threats to internal validity because the assignment to treatment is completely random. When children are randomly to treatment and control groups, the groups should not differ on baseline characteristics on average – especially if groups sizes are large enough. Accordingly, the use of experimental studies can be used to draw causal inferences. As with all methods, it is important to test whether groups differed on baseline characteristics or whether they experienced different levels of attrition.

A famous example of ECE experimental study is the Abecedarian Project, in which 111 low-income children at or near birth were randomly assigned to either attend a high-quality ECE center from infancy to entry to primary school or to a control group. The treatment and control groups were similar on most baseline characteristics, and both groups experienced very little attrition. Comparisons of the treated and control children yielded large differences in IQ and academic outcomes at entry to school (d = .5) that were maintained into adulthood (d = .2) (Campbell et al. 2012).

Summary

Policy and practice are most effective, especially when addressing SDGs, when based on strong evidence. Research and evaluation can provide that evidence when the designs and analysis can rule out alternative explanations. Experimental studies provide the strongest evidence of the effectiveness of practices and programs. They are not always possible for practical or ethical reasons. Various quasi-experimental designs provide varying levels of confidence that causal conclusions can be drawn from observational studies. Approaches like instrumental variables, fixed effects, and regression discontinuity allow for causal inference but make strong assumptions that can be difficult to meet. Propensity score approaches are often easier to use and meet their underlying assumptions but provide less confidence about whether alternative explanations for findings might exist. Regression approaches, including multiple covariates, reduce bias but are unlikely to rule out alternative

explanations. Using baseline measures of the outcome variable can further reduce potential bias.

Threats to External Validity

Using research and evaluation to identify practices that address the SDGs also depends on the extent to which findings from a given study apply to other individuals. External validity refers to the level of confidence that results can be generalized beyond the sample to the population in general. Issues of generalization are related to at least two issues: (1) sample size and representativeness and (2) replicability of findings.

Sample Size and Representativeness

Ideally, the sample consists of a large number of individuals randomly selected from the population of interest. Sampling can involve simple random selection (i.e., all individuals in the population have equal opportunity to be selected) or stratified random selection (multilevel sampling, often with oversampling within smaller strata of interest such as children from underrepresented race/ethnicity groups). Results from a study can be generalized to the population when simple or proportional random sampling is used or when cluster random sampling is used and sample weights are applied.

A few studies of ECE involve representative samples. For example, the Family and Child Experiences Survey (FACES; Aikens et al. 2013) is a representative sample of Head Start programs that is conducted approximately every 3 years. Most ECE studies, however, do not involve randomly selecting participants. As such, findings generalize to the extent that the sample is viewed as sufficiently large and potentially representative of the population of interest.

Many of the RCT studies have issues with external validity due to the small sample sizes and the relatively homogeneous nature of the participants. For example, the Abecedarian Study (Campbell et al. 2012) involved 111 children born in Chapel Hill, NC, between 1970 and 1977. Accordingly, there are potential issues project findings are extrapolated to all low-income children today.

Other larger studies have issues with external validity due to underrepresentation of important subgroups. For example, the NICHD Study of Early Child Care and Youth Development restricted the sample to English-speaking mothers and oversampled for low-income African American families and, as a consequence, has almost no Hispanic or middle-income African American families (NICHD ECCRN 2005). Therefore, this study cannot address questions about dual-language children or middle-income African American children.

Replicability of Findings

Whereas the need to replicate findings is widely acknowledged, there is less support for actually conducting and reporting replications. With increased focus on translation of ECE research into policy and practice, there is increased attention to threats to external validity related to trusting a finding from a single study to change either policy or practice. Accordingly, there are various methodological approaches designed to examine replicability of findings that have been applied to high-profile ECE issues.

Parallel Analyses and Literature Reviews The most common approach is to conduct the same or similar analyses across studies. Some of the major findings have been replicated across a number of studies. For example, Burger (2010) reviewed the ECE literature in the USA, and throughout the world, and the Curriculum Quality Analysis and Impact Review of European ECEC reviewed the European ECE literature (CARE 2016). Both summaries indicated that most rigorous ECE programs have moderate to large short-term impacts, especially more children with social risk factors, but they have more modest long-term impacts. They conclude that ECE programs targeted toward children experiencing social risk factors such as poverty can reduce the gap between them and more advantaged children, but Burger concludes ECE cannot eliminate it.

Meta–Analysis A number of studies have combined ECE studies to provide a formal test of findings across studies addressing the same or similar ECE issues. The meta-analysis provides a less ambiguous answer than parallel analyses or a literature review discussing the findings because findings are combined across studies in a manner that accounts for sample size, variability in effects, and multiple findings from the same sample. These meta-analyses can range from a comprehensive search for all relevant studies (e.g., Karoly et al. 2005; Duncan and Magnuson 2013b) to a means for combining results across parallel analyses in selected studies (e.g., Keys et al. 2013).

One of the most widely cited meta-analyses in ECE is the analysis of short- and long-term effects of the early intervention studies (Karoly et al. 2005). Their meta-analysis focused on the evaluations of 20 early childhood programs that involved experimental or quasi-experimental designs of studies involving ECE or parent education treatments. They found evidence of moderate impacts of center-based ECE interventions on academic and social outcomes in approximately two-thirds of the programs, with larger impacts for more intensive programs (e.g., 20+ hours per week) that focused directly on improving school readiness.

Summary

There is wide-scale acknowledgment that samples must be sufficiently large and diverse to address ECE issues, but perhaps not sufficient attention to whether findings replicate across studies or whether samples truly allow for generalization to the

general population. Use of representative samples is important for generalization to the population. Methods such as parallel analyses or meta-analysis are important to allow conclusions to be drawn across multiple studies. It is essential that programs and practices are examined within the culture of the children for whom they are being created (Kaur and Saraswathi 1992), ideally using representative samples and replicating findings across multiple studies.

Discussion

Attention to internal and external validity is important if researchers want to address issues related to the sustained development goals for the next generation. Identification of which programs and practices are effective for whom is critical in order to achieve the goals of supporting child and youth outcome for all children across the world. Research plays a critical role in determining the extent to which practice are effective within the context of the country and culture (Raikes et al. 2017). This research must meet high standards of internal and external validity in order to provide the answers regarding what works for whom by accurately testing impacts for different populations of children. This is critical because implementation of programs or policies that are not effective will not achieve the SDGs and will waste resources that could be expended more effectively. The ECE literature demonstrates these issues by demonstrating increased rigor during the past 40 years and increased translation of this research into policy and practice (Yoshikawa et al. 2013). Continued vigilance to threats to both internal and external validity is needed as ECE research and research in other social and environmental issues are translated into policy and practice across the world. Hopefully, the use of research methods that address concerns about both internal and external validity will provide researchers with the evidence needed to develop and revise social programs that can have the desired positive impacts on these social, environmental, and policy issues as we strive to meet the SDGs.

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Chapter 20
Optimizing Early Childhood Potential for All: Pursuing Holism in Measurement, Policy, and Practice

Amy Jo Dowd, Lauren Pisani, and Celia Hsiao

Introduction

Sustainable Development Goal (SDG) 4.2 aims to ensure that by 2030, all girls and boys have access to quality early childhood development, care, and pre-primary education so that they are ready for primary education. This brings together the double-barrelled aims to enhance access to quality early learning (4.2.2) and ensure children are developmentally on track (4.2.1). In reality, however, few children in low- and middle-income countries (LMICs) begin life with appropriate care and early stimulation, and so poverty, stunting, and lack of cognitive stimulation mean that almost half of 3- and 4-year-old children are unable to achieve their potential with respect to cognitive, socio-emotional, or physical development (McCoy et al. 2016). The fact of inequitable access to and quality of pre-primary education in LMICs (UNICEF 2015) drives this deficit, even as evidence mounts about the importance of stimulation and early learning opportunities for optimal lifelong development and success, especially in LMICs (Britto et al. 2016). In this chapter, we posit that one of the reasons for the disconnect between research related to SDG 4.2 and policy responses is that global statistics are not enough to guide local and national policy makers toward equitable or sustainable solutions; they need more detailed, locally relevant information on which to act.

This policy context makes efforts to both devise viable solutions for realizing SDG 4.2 and to measure their impact and equity more relevant than ever. While the Early Childhood Development Index (ECDI) in UNICEF's Multiple Indicator

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Cluster Surveys (MICS) has existed at the global level since 2009, a number of other regional and global efforts to measure child outcomes in more detail have recently arisen, for example, the Regional Project on Child Development Indicators (PRIDI) in Latin America and East Asia-Pacific Early Child Development Scales (EAP-ECDS) in Asia. Similarly, the International Development and Early Learning Assessment (IDELA) followed by the Measuring Early Learning and Quality Outcomes (MELQO) tool kits represents global initiatives to gather richer, more actionable information about early childhood education (ECE) quality and equity issues. The variety herein acknowledges that the differing implementation contexts and cultural variation in child development make meaningful measurement complex. Yet, despite the limitations, such measurement is central to a consideration of equity (Raikes 2016).

In this chapter, we present evidence from the International Development and Early Learning Assessment (IDELA) to demonstrate the utility of a holistic, low-cost, culturally and developmentally appropriate direct child assessment. We show its utility for testing diverse solutions to improving ECE access and all children's early learning and development, as well as for stimulating local and national policy conversations about progress toward SDG 4.2. We share results related to the contribution of quality ECE to children's early learning and development as well as the equity of those solutions. We also offer examples of how contextualized evidence enhances understanding about effective and holistic investments and helps to build local and national ownership of such initiatives, which ultimately drives support for systemic change.

The Potential of the Early Years

Currently, global statistics suggest that less than half of children living in LMICs have access to pre-primary education support – 18% in low-income countries and 50% in lower-middle-income countries (UNESCO 2013; World Bank 2014). Studies have shown that high-quality pre-primary classes can significantly improve children's learning and development (Engle et al. 2011), and traditionally conversations around ECE expansion have focused on center-based programming. However, disaggregated pre-primary enrolment data clearly display that access is least prevalent for poorer children living in rural areas, highlighting the fact that alternative solutions are needed to reach the majority of children in LMICs (Britto et al. 2016; UNICEF 2015).

Evidence tells us that positive early experiences both in schools and in homes build strong brain connections (Hart and Risley 1995; Heckman 2004; Lonigan et al. 2008). Especially relevant for children growing up in LMICs is the evidence from both developed and increasingly from developing contexts suggesting that even in the presence of poverty and malnutrition, caregiving that is warm, responsive, and stimulating promotes strong development. Longitudinal studies have found that early stimulation programs can have lasting effects on children's cognitive and language

abilities despite the children being stunted (Walker et al. 2005). A systematic review of early childhood education for children ages 3 or older found that children from poorer families tended to benefit developmentally as much or more than their wealthier peers (Burger 2010). Further, an evaluation of the Head Start program in the USA found that although the impact of the program tended to fade out over time for most children, the children who showed the strongest, longest lasting positive impacts were those from families with the highest levels of disadvantage (Puma et al. 2012). These findings set an optimistic tone for the potential of addressing equity in aiming for SDG 4.2 as quality early learning opportunities promote development even for the most vulnerable children.

Because research has shown that the children who are the least likely to receive these services are also the most likely to need and benefit from them, many call upon ECE to equalize the early learning and development of young children from disadvantaged backgrounds (Irwin et al. 2007; Hertzman et al. 2012). A variety of pre-primary education models in LMICs have demonstrated strong positive effects on a small scale (Aboud and Hossain 2011; Borisova et al. 2017; Dowd et al. 2016; Martinez et al. 2012; Moore et al. 2008; Rao 2010; Zaveri 1993). Many questions remain, however, about how these models can function at scale and how they can effectively reach the children who need them the most. To answer these questions requires measurement of early learning and development to inform policy and practice.

Measuring Progress Holistically

In order for practitioners and governments in LMICs to be able to realistically bring child development evidence into their decisions about action and investment, they need an easy to use tool that is low cost, realistic at a large scale, reliable, and culturally relevant (Barrett et al. 2015; Bartlett et al. 2015; Chavan and Yoshikawa 2013). Such tools allow governments and policy makers to track progress toward SGD 4.2 and provide program implementers and local communities with better information about the possible interventions and remediation approaches that appropriately address children's needs in LMICs. In this way, locally relevant tools drive support for ECE initiatives that have been proven to be effective in a particular context and can promote policy change from the ground up.

In addition to being feasible, reliable, and culturally appropriate, such tools must incorporate multiple domains of development in order to capture a holistic picture of the varied skills that children bring with them to primary school (Snow and Van Hemel 2008). Beyond development of precursor academic skills like literacy and numeracy, evidence highlights the importance of nonacademic skills in children's development, such as socio-emotional development, especially when children are exposed to adverse environments or life events (Betancourt et al. 2014; Heckman 2006; Izard et al. 2017). Focusing only on academic skills would risk missing important components of what children need to be successful in school and beyond;

this includes, among others, social emotional skills that are critical to children's understanding of the social world and social interactions that play a foundational role in the adjustment and healthy functioning of children among peers and others.

Further, understanding children's development and learning requires having information beyond a child's skill set or performance on a specific assessment. The ecological model of human development as emerging from the complex interplay between child and environments, such as family and home, stresses the direct and powerful influence of these proximal environments on children's early learning (Bronfenbrenner 1979). Shonkoff et al. (2016) and others have demonstrated the importance of dynamic interactions between children's development, their home environments, and various environmental and social factors (including poverty, exposure to violence, among others). While global statistics capture consistent trends at the highest level, more contextualized data that give voice to conditions on the ground provide more actionable information for local and national policy makers.

Instruments

We present data gathered using the IDELA, a child assessment tool highlighted in the recent Early Childhood Development *The Lancet* series as an influential development in the field (Black et al. 2016). The IDELA tool is a holistic, rigorous, open-source, direct child assessment for 3- to 6-year-old children that has been adapted and used in more than 45 different national and subnational contexts that vary linguistically and culturally. The IDELA measures motor development, emergent language and literacy, emergent numeracy, and socio-emotional development, and psychometric analyses have confirmed that these constructs hold together within each context (Wolf et al. 2017). Currently, IDELA is the most widely used assessment tool that gathers early development and learning information directly from children themselves in a holistic and rigorous way. The assessment is framed as a series of short games. Children interact individually by a trained enumerator, and the interview takes an average of 35 min per child (Dowd et al. 2016). Materials used to administer IDELA items include picture cards, small manipulatives for counting, and a children's storybook, all of which are contextualized and locally adapted.

The IDELA tool is often implemented alongside the IDELA Home Environment Tool, which focuses on family characteristics and the learning environment within the home to enable a glimpse of the dynamic developmental processes occurring therein. This tool is routinely administered as a one-on-one questionnaire with the primary caregiver of a child who is participating in the IDELA study. Along with common questions related to parental education and household assets, the IDELA Home Environment Tool also includes detailed questions about caregiver-child interactions (e.g., playing, singing, reading, etc.) as well as reading and play materials available in the home. These data allow an estimate of the extent of cognitive and social stimulation to which a child may be exposed in the home.

Table 20.1 Study sample characteristics

Country	Site	Design	Year	Sample size
Afghanistan	Kabul, Kandahar, Faryab, Sar-e Pol	Cross section	2015	2613
Bhutan	National	Longitudinal	2015	1372
Cambodia	Kampong Cham, Prey Veng, and Kratie	Cross section	2015	302
Ethiopia	West Showa	Longitudinal	2013	360
Ethiopia	West Showa	Longitudinal	2015	629
Laos	Luang Prabang	Cross section	2015	460
Lebanon	Akkar and Bekaa	Cross section	2016	300
Thailand	Narathiwat	Cross section	2016	381
Rwanda	Ngororero	Longitudinal	2014	617
Ukraine	Zakarpattia and Odeska	Longitudinal	2016	111
Vietnam	Yen Bai and Quang Nam	Cross section	2015	373

Data

In the following section, we will cite findings from evaluations conducted recently in ten geographically diverse sites that measured child development using the IDELA tool alongside the IDELA Home Environment Tool. Basic study characteristics are listed in Table 20.1.

Using Evidence to Inform Policy Decisions and Practice

Global data from the UNESCO Institute of Statistics (UIS) and the World Bank have been used to highlight the inefficiencies of early learning programs and specifically the transition into primary school in LMICs. For example, a recent multicountry study found that the combination of increased enrollment in early primary grades, lack of pre-primary participation, and children's weak early cognitive skills was contributing to increased dropout rates, repetition, and poor learning outcomes in primary school across numerous LMICs (Crouch and Merseth 2017). While these issues are common and now well documented in many contexts, they persist in part because the global data is not enough to motivate local and national policy makers to make substantial changes to their pre-primary education systems. More motivating is the concrete evidence from their own communities and contexts about programs proven to improve children's learning outcomes through increased pre-primary education quality and/or enhanced access.

One early example of how IDELA was used to contribute to this evidence base is from a site in Ethiopia in 2012–2013. A randomized control trial of a new preprimary education program found that not only did the program greatly enhance early learning and development for children but also the equity of skill distribution in the community (Dowd et al. 2016). Children from families with the lowest socioeconomic status (SES) started off with significantly lower average emergent literacy

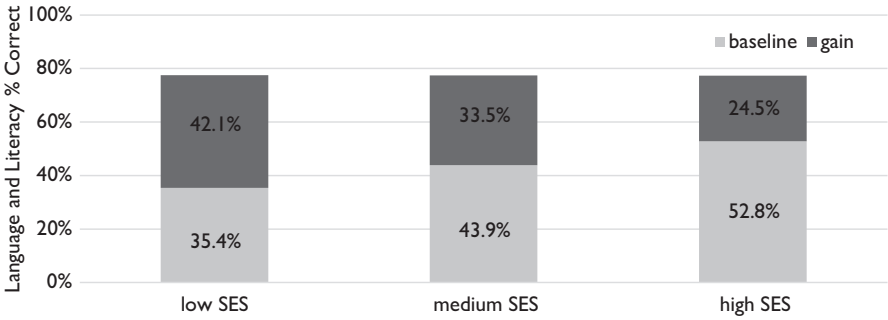

Fig. 20.1 Ethiopia: average emergent language and literacy baseline and gain scores among children in treatment centers, by SES (N = 360)

scores compared to their wealthier peers. By the end of the school year, they had gained more skills in this domain and had "caught up" to the performance of those in the higher SES quintiles, even after controlling for parental education, age, and sex (Fig. 20.1). This means that when these children made the transition from ECE centers into primary school, the gap in their learning and development associated with SES had disappeared; all were scoring nearly 80% correct and nearing mastery of foundational literacy skills. In this way, the program served as an equalizer by supporting children from more disadvantaged backgrounds to reach the same level of performance as their more advantaged counterparts.

While encouraging in terms of program effectiveness, these evaluation results also highlighted a very concerning issue related to the study control group of children without access to pre-primary education. These children scored significantly lower than all other groups at baseline (28% correct)and gained significantly less by the follow-up evaluation 5 months later. These findings informed two realms of movement toward SDG 4.2. First, Save the Children continued investing in and advocating for improving the quality of ECE classes in alignment with the Ethiopian government's push for offering 1 year of pre-primary classes to all children. Second, because this finding highlighted the fact that the neediest children were those in communities without ECE centers, Save the Children began testing additional support in the years leading up to ECE access to optimize children's potential.

Recognizing that issues surrounding inequities in access were prevalent not only in Ethiopia but throughout the LMICs where Save the Children is working, home-based programs were also tested elsewhere using IDELA. Evaluations from sites in both Ethiopia and Rwanda highlight the potential efficacy of high-quality home-based programs. In both sites, children in the intervention group showed higher gains than peers in standard center-based ECE programs (Fig. 20.2) (Borisova et al. 2017; Save the Children 2015).

The Rwanda study followed children into grade one (Fig. 20.3) and found that children in the home-based intervention program sustained the largest longer-term gains in learning and development over a 1.5-year period as compared to their peers.

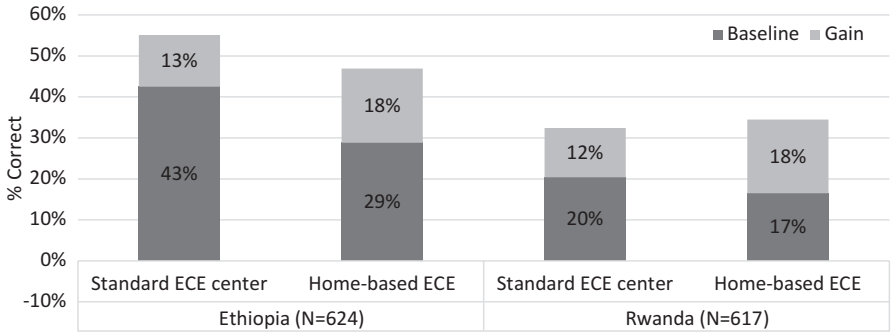

Fig. 20.2 Average IDELA baseline and gain scores by site and treatment group

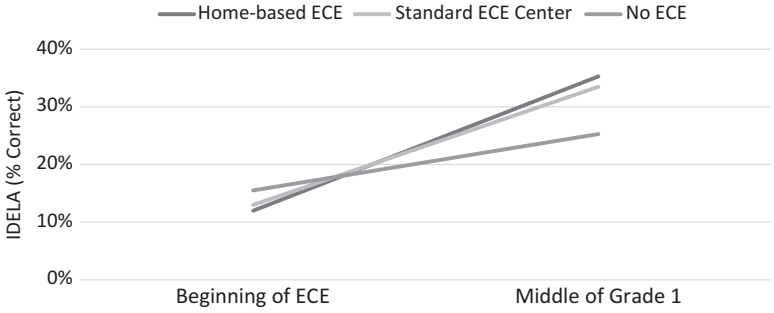

Fig. 20.3 Average IDELA scores by time and treatment group (N = 313)

These results, along with others detailing efficiency and effectiveness issues in the early grades of primary school in Rwanda (Friedlander et al. 2014), helped to motivate the Ministry of Education to partner with UNICEF to undertake a national-level study of school readiness using IDELA. The study began in 2016 and is focusing on tracking children's skills as well as dropout and repetition rates in order to develop a national strategy for improving retention and learning in the primary education system. In each of these settings, evidence informed government movement toward SDG 4.2 as well as practitioners' awareness of the need for and success of testing alternative models for early learning support.

Similar to Ethiopia and Rwanda, governments in many LMICs are adopting policies and working toward expanding pre-primary enrolment (UNESCO 2015). However, reaching all children with such services will take years, and ensuring their quality will likely take even longer. In the meantime, systems need to orchestrate more options for children to benefit from high-quality early learning experiences. Measurement tools like IDELA are central to testing, adjusting, replicating, and scaling alternative models of pre-primary education. Its use can help diversify options in expanding early childhood opportunities by showing viable options for building strong early learning environments for children wherever they are.

Reaching All Children with ECE Opportunities

Understanding which children cannot access ECE services is important to realizing SDG 4.2, but it is equally critical to ask whether all children who are receiving services are benefiting equally. Using IDELA to ask this question within both classroom and alternative ECE programming evaluations is critical to hold practitioners and policy makers accountable for reaching all children with the learning support that they need. In some cases, results may lead to intervention/investment shifts to target solutions for the poorest children, those from language or ethnic minority groups, children with disabilities, those fleeing violence and war, or others who are marginalized for different reasons.

A recent report detailing IDELA use by Save the Children and partners found that organizations were using the tool to generate new information about a wide range of programs and equity issues (Save the Children 2017b). For example, the International Rescue Committee (IRC) is using IDELA to strengthen the evidence base about the early learning and development needs of Syrian children living in Lebanese refugee camps. The project aligns with the Government of Lebanon's national NFE Framework and the UN Lebanon Crisis Response Plan, and the curriculum focusing on strengthening socio-emotional skills to build young children's resiliency curriculum draws from the Lebanese Ministry of Education and Higher Education. Results from the300-child pilot study demonstrated impressive gains across all the IDELA developmental domains, suggesting the program did contribute to improving young children's school readiness within an emergency context. In the 2016–2017 academic year, IRC leveraged this learning to expand its reach to 3000 preschool-aged children in Akkar and Bekaa.

Especially relevant to ECE programming expansion is the consideration and inclusion of children from varied language backgrounds. Save the Children studies in Laos and Vietnam have found that children from minority language/ethnic groups score significantly lower (by 12 percentage points in Laos and 10 percentage points in Vietnam) in literacy development than their peers from the majority language/ethnic group (Save the Children 2017a). Similarly, results from an IDELA study undertaken by the Step by Step Foundation in Ukraine showed Roma children scored on average 20 percentage points lower than non-Roma children in early literacy and numeracy. Reflecting on this, teachers identified that one of the primary challenges for Roma children entering preschools in the Ukraine was integrating into classrooms that did not use their mother tongue (Save the Children 2017b). This is a common experience for many children around the world, and these data fuel advocacy to demand additional inputs and supports, so minority language-speaking children reach the same skill level as their peers who speak the language of instruction in the formal schooling system. Such advocacy efforts, substantiated by locally driven evidence, will contribute significantly to the achievement of SDG 4.2.

For pre-primary expansion to truly benefit all, inclusion in early learning programs must extend beyond language and ethnicity to children with developmental delays and disabilities. Recent work in Thai communities adding child functioning

questions from the Washington Group on Disability Statistics into the IDELA Home Environment Tool found that children whose parents identified them as having a developmental challenge demonstrated significantly lower IDELA scores (five to seven percentage points depending on domain) than other children. This developmental information is critical for program staff, ministry partners, and policy advocates to understand, describe, and address children's needs more effectively.

Bringing Early Learning Home

Although salient equity factors differ by context, analyses across Save the Children sites that use both the IDELA and the Home Environment Tool show some consistent trends. Specifically, data from program sites as diverse as Afghanistan, Bhutan, Cambodia, Ethiopia, and Vietnam consistently display the importance of supportive home learning environments. The stronger the presence of learning and play activities at home – such as reading, telling stories, singing, playing, drawing, teaching letters, numbers, or other new things – the more advanced children's learning and development (Fig. 20.4) (Save the Children 2017a).

Converse to the supportive trends in Fig. 20.4, we have observed a negative association between harsh discipline and children's learning and development across Afghanistan, Bangladesh, and Cambodia, even after controlling for parent education, socioeconomic status, and the presence of positive home learning activities (Fig. 20.5) (Save the Children 2017a).

These trends and findings bear important policy implications to support the home learning environment to maximize children's early learning. Further, it is important to investigate the equity of early learning programming across varied contexts

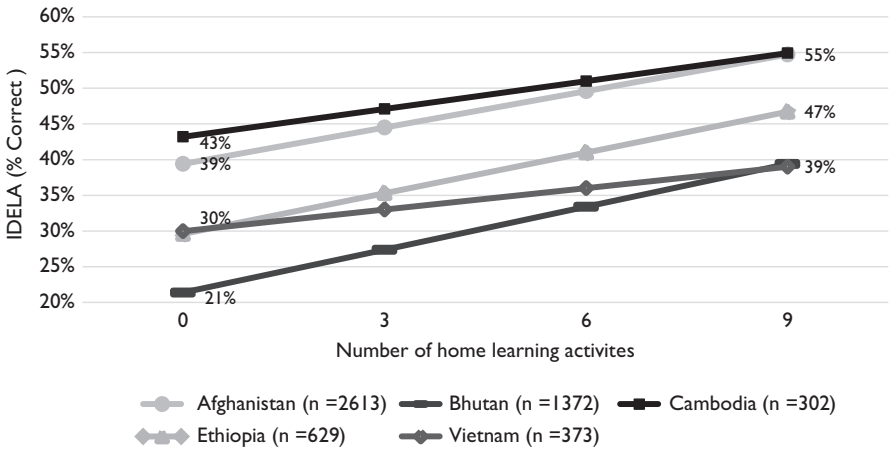

Fig. 20.4 Average IDELA scores by number of home learning activities and site

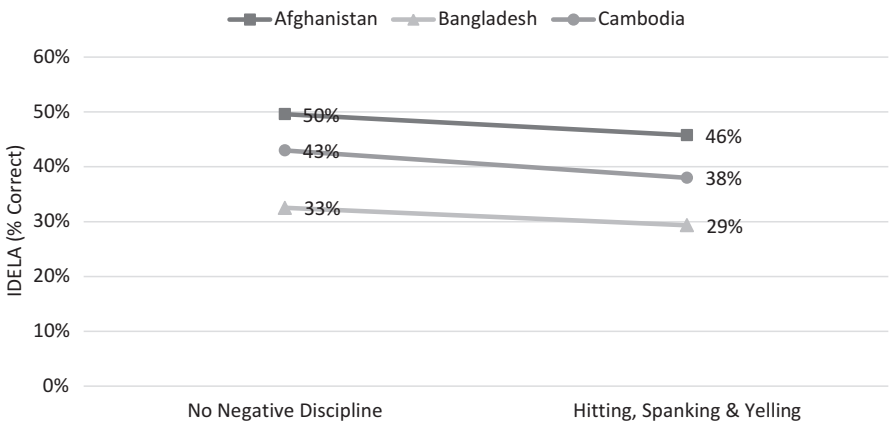

Fig. 20.5 Average IDELA scores by discipline and site

because issues and appropriate solutions will differ greatly and have implications for options for achieving SDG 4.2. While a policy maker might assume that working toward SDG 4.2 means building preschools, these trends and the evidence in the previous section can reveal options for intervening well before preschool or investing in children's learning without years of expensive building projects.

Holism in Solutions

Earlier in the chapter, we made a call for holism in measurement. We now echo that call for holism in solutions. Because effective support for early learning and development is multifaceted, collaboration across many stakeholders is needed to identify what works at scale. More so than other sectors, services for the pre-primary age group lack consistent ownership. Different countries and regions conceptualize where ECE fits in varying ways – within or across ministries of education, health, social welfare, and/or women/gender. Programming is also more fractured than other sectors – spread across public, private, NGO, and government service providers. Such fragmented and inconsistent government involvement and service provision models can hamper progress toward scalable solutions. However, this can be overcome. Bhutan offers one recent example of how tools like IDELA that provide in-depth, nationally relevant child development information can help diverse groups collaborate to bring about systemic change in ECE.

Similar to Ethiopia and Rwanda, the Royal Government of Bhutan has adopted policies that support providing 1 year of pre-primary education to all children in the country. National ECE coverage, however, is currently 18%, and a recent national study of young children's learning and development in the country found that, compared to children in urban areas, children in rural areas, who are harder to reach with

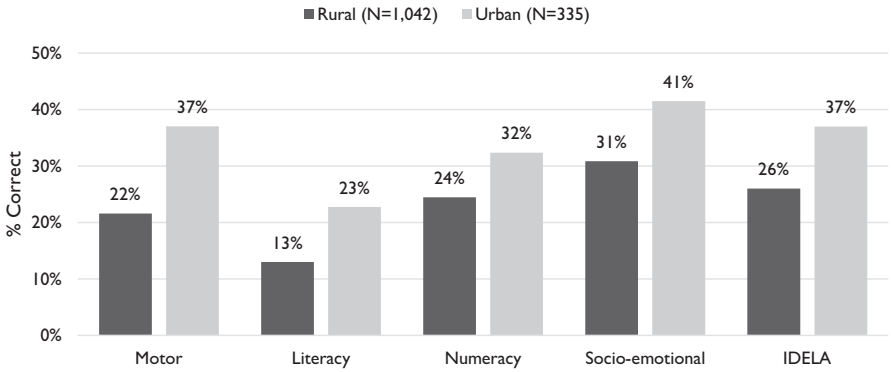

Fig. 20.6 Bhutan: average IDELA score by domain and urbanicity

center-based programming, displayed substantial gaps in various areas of their learning and development (see Fig. 20.6) (Pisani et al. 2017).

Prior to this study, children's learning and development had never been evaluated across ECE actors in the country, but collaboration between civil service organization, international non-governmental organization, and private and corporate actors on this effort brought buy-in and subsequent action from all parties.

So while the Ministry of Education is working to build system-level solutions for increasing access to high-quality pre-primary schooling through the various ECE providers in the country, such as establishing their first pre-primary teacher diploma program, they are also moving forward with less costly, more immediate solutions for children who are most in need of early learning support. In partnership with the Ministry of Health, the ECE division of the Ministry of Education has launched a pilot program to deliver parenting education to caregivers of children aged 3–6 years through village health workers (VHWs) who currently provide support in health and sanitation. An ongoing evaluation of this program will speak to the feasibility of integrating such home stimulation interventions in existing community programs delivered by VHWs, as well as shed light on the impact of this programming on caregivers' behaviors and children's learning and development. Holistically measuring child development in Bhutan's ECE settings has informed a broad array of stakeholders invested in ensuring both greater access to quality pre-primary and more children developmentally on track. In this way, IDELA use in Bhutan has supported specific program and policy action to further movement toward achieving SDG 4.2.

Future Research

Research on what works in pre-primary education is growing rapidly (Black et al. 2016), but more comprehensive and collaborative efforts are needed. Holistic and locally relevant evidence is required to optimize lessons learned and advocate

effectively with policy makers. Cross-sectoral collaboration as well as interorganizational cooperation will also be essential to generating consensus about how to meaningfully make and measure progress toward SDG 4.2. Evidence about the feasibility of alternative ECE models and the cost-effectiveness of these programs is especially scarce. Building this evidence base with enough contextualized information and stakeholder buy-in to stimulate change will require national, regional, and global leadership that prioritizes outcomes for children.

Conclusion

Using a holistic measure, Bhutan has taken important steps toward cross-sectoral, multi-stakeholder expansion of pre-primary services that is driven by high-quality national evidence to inform adaptations to reach all children via the testing of home- and center-based initiatives. Globally, substantial progress can be made in the next 15 years if other nations follow a similarly data-driven model and embrace cross-sectoral options. For example, the challenges of appropriately integrating ECE classrooms into existing primary schools are substantial, but if a holistic assessment can prove the equity and impact of such an investment across academic and nonacademic domains, then the developmental payoff for children of achieving quality in the coverage that primary education has attained would be worth the effort. Rigorous, contextually appropriate tools that prioritize considerations of equity are required to measure these innovations effectively and help us understand what children who face the greatest challenges need in order to achieve their full potential. Generating multidimensional data to understand the needs of children at the bottom of the developmental distribution and to test supportive solutions will propel progress on SDG4.2 and bring the greatest benefits to children, communities, and nations around the world.

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Chapter 21
Application of Research Evidence in Policy Formulation to Enhance Child Development Opportunities in Zambia

Robert Serpell

Evidence-Based Planning for Progressive Social Change

Acknowledging cross-cultural diversity in child-rearing practices and beliefs (e.g. Lancy 2015) does not logically imply absolute cultural relativism. As international organizations strive to facilitate not only peaceful coexistence among contrasting groups but also global sustainability and social progress, certain customs, and the philosophical perspectives that underlie or inform them, demand examination from the angle of not just "what prevails and why?" but also "what do we as a world agree on as the best way forward, and how can it be promoted?"

One widely accepted generalization in the emerging field of cultural developmental science (e.g. Jensen 2015) is that the people responsible for everyday care and socialization of young children in a given cultural group tend to share a number of common beliefs about how children develop and what are the most desirable and effective types of influence on the course of child development, including parenting practices. This stock of shared child-rearing beliefs and accepted practices, variously known as parental ethnotheories, implicit models or cultural meaning systems (Goodnow and Collins 1990; Bornstein and Cheah 2006), often differs in significant ways from one cultural group to another. Since young children are normally raised under the care of their family of origin, a normative principle for international consensus building and sustainable international cooperation is that their families' cultural beliefs and practices need to be taken into account in the formulation of public policy.

Systematic inquiries have revealed multiple issues to be addressed in humanity's struggle to build a better world. This chapter focuses on two cases in Zambia's history where evidence based on such inquiries was cited in support of particular aspects of educational policy: the language of initial literacy instruction in public

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schools and community-based support for children with special educational needs. Two overarching principles for evaluating such policies are the desirability of maximizing inclusion and local accountability. The process of policy implementation is impacted by various types of conflict and calls for continuous adaptation.

The case studies of policy development and implementation presented in this chapter illustrate some recurrent challenges that have arisen in the context of Zambia's educational and human development planning over the past several decades. Drawing on those experiences, some general principles are proposed for optimizing applications of scientific research to educational policy development: the need to (a) pay close attention to contextual factors in designing applications of scientific theory to public policy; (b) use multidimensional criteria to evaluate pilot projects; (c) build gradual change into the process of scaling up interventions, allowing for localized fine-tuning over time; (d) recruit technical input into the detailed design of policy and implementation processes; and (e) acknowledge multiple perspectives among stakeholder groups and co-construct opportunities for productive dialogue.

The first case study centres on language of instruction in the early grades of basic schooling and begins with a fateful decision by the newly independent government of Zambia in the mid-1960s to introduce a policy of linguistic immersion in English throughout the basic school curriculum, starting from Grade 1 for all children irrespective of their home language (Mwanakatwe 1968). That policy was eventually reversed in a cumulative series of government decisions between 1996 and 2014. The second initiative centres on the principle of community-based rehabilitation (CBR) as a framework for systematic instructional support to children with special educational needs (CSEN). It was first mooted as a policy option in Zambia in the mid-1980s in the follow-up to a National Campaign to Reach Disabled Children (Nabuzoka 1985). It was never formally adopted as a national policy but has been widely invoked in various service provision program documents over the subsequent three decades.

Language of Initial Literacy Instruction

Literacy skills, unlike the capacity for spoken language, are not part of the biologically primed course of human ontogenesis. In order to acquire the skills of understanding and expressing ideas in the medium of writing, a novice has to master through learning a specific way of representing spoken language in script. It is widely agreed among researchers that, other things being equal, this task is easier to address through a spoken language in which the learner is already competent. Based on this self-evident principle, Christian missionaries from the West who laid the foundations of formal schooling in Zambia (as in many other African countries) gave priority to the indigenous languages spoken in children's homes as media of initial literacy instruction, and the colonial administration followed suit as they began to establish basic public schooling for Africans.

However in the first decade of Zambia's independence as a sovereign state, the national government introduced a policy of linguistic immersion in English starting from Grade 1. At that time English was regarded as a mother tongue, first language or predominant language of communication by only a negligible proportion of the population (Kashoki 1978). The architects of this English Medium Scheme acknowledged that very few of the children for whom it was prescribed had more than minimal prior familiarity with the English language. But they justified the scheme as a cost-efficient preparation for the pre-existing upper primary and secondary school curricula which were already in English and as a necessary response to the linguistic diversity of the urban population (Linehan 2004). The indigenous Minister of Education, who presented the case for nationwide introduction of the English Medium Scheme to cabinet in 1965, underlined the value of English as an ethnically impartial shared cultural resource for national unification. In a later autobiography, he explained that for him the primary motivation was to redress the inequality of educational opportunity prevailing in the nation's urban primary schools, which had been structured in accordance with a racially discriminatory policy by the colonial regime (Mwanakatwe 1968). By building strong language competence in English in a new generation of young Africans, he hoped to put them on an equal footing with their expatriate English-speaking peers in a process of one-way racial integration of the previously segregated urban schools. Meanwhile, in parallel, the quality of instruction in the majority "unscheduled" schools across the nation would be upgraded with the new English medium curriculum.

Research evidence that it is feasible for children to acquire initial literacy in an unfamiliar language was presented to policymakers by expatriate technical advisors, who cited an early-grade immersion experiment in Canada. Anglophone families in a predominantly French-speaking town (St-Lambert, Quebec) had opted to enroll their children in French-medium immersion classes from the very beginning of their schooling (Lambert and Tucker 1972). The outcome was normal academic performance in their mother tongue (English), very good knowledge of the second language (French) except for spoken expression, and no disadvantages in mathematics or intelligence (Spolsky 1973).

But to extrapolate from that Canadian experience to the Zambian postcolonial situation called for much closer attention to sociocultural, political and economic context. It has since been widely recognized that there were "a number of contextual features present in the St. Lambert program and many subsequent EFI (early French immersion) programs across Canada which researchers only later identified as important – perhaps even crucial – to the success of these programs" (Wesche 2002, 359). The mother tongue of the middle-class Canadian families was English, a high-status majority language to which the children immersed in French at school had easy access at home and through the media in both spoken and written form. But in Zambia, the indigenous Bantu languages spoken by the majority of children's parents at home lacked such prestige and were much less widely accessible in written form than English. Instead of strengthening and building on the families' linguistic resources as a foundation for initial literacy learning, the immersion curriculum sought to replace them with a language of state power.

Nevertheless, the pilot introduction of the English Medium Scheme was deemed a success by 1970 and seamlessly expanded to a nationwide new Zambia Primary Course (ZPC). McAdam (1978), the British expatriate technical cooperation officer who led the development of the course, conducted a systematic study. Compared with children enrolled in schools where the earlier syllabus was still in operation, ZPC pupils scored significantly better on tests of English and social studies but significantly worse on arithmetic problem-solving. Proficiency in the Zambian languages was not assessed. One finding of peculiar interest was that scores on the English tests by ZPC pupils were bimodally distributed, with about half the pupils scoring as poorly after 4 years of 70% English medium education as those who under the old syllabus had been exposed to the English language for about 17% of their corresponding time in school. The weak performance of this large group of ZPC pupils seems to reflect failure to learn to read in the medium of English. A questionnaire to ZPC teachers in the same study revealed a rising proportion of pupils over Grades 2–5 with severe reading handicaps. Sharma (1973) similarly found extensive reading deficiency in an independent survey of ZPC pupils in Grade 3. In spite of the very mixed blessings revealed by his study, McAdam (1973, 534) concluded that the "advantages of the use of English as a medium of instruction appear to be attainable without any serious educational loss".

Other observers, however, were impressed with three main problems arising from the introduction of the English medium course: (1) dislocation between the cultures of home and school, (2) insufficient linguistic competence for a "complete and terminal" primary education and (3) language stratification linked to socioeconomic class formation (Serpell 1978). The first of these problems was forcefully expressed by the Republican Vice-President of Zambia, as follows:

> we should stop teaching children through English right from the start because it is the surest way of imparting inferiority complex in the children and the society… The African children will only defend the European culture because that is what they will be taught from the start to the finish. (Kapwepwe 1970, p. 68)

The theme that early immersion English medium schemes in Africa were part of a wider process of cultural hegemony and neocolonial domination has since been articulated by a number of scholarly critics (e.g. Prah and Brock-Utne 2009). But in the 1970s, this was dismissed as a "conspiracy theory" by many Zambian policymakers who favoured a "modernization" interpretation of the English language as a key resource for national development. A 2-year national curriculum reform debate initially appeared to respond to several of these concerns, with a proposal that initial literacy instruction would be offered in the lower primary grades in seven of the major indigenous languages (GRZ 1976). However, this idea was dropped completely in the final report (GRZ 1977). Thus, criticisms of the early-grade English medium immersion policy voiced by a number of local scholars and politicians failed to impact on the policy, which was endorsed and further entrenched at the conclusion of the debate.

A few years later, the Zambian economy plunged into a deep recession that lasted through the 1980s and 1990s, giving rise to drastic reduction of public funding to the

education sector and severe declines in educational enrollment and achievement. A World Bank-funded investment program in basic education in the late 1990s (World Bank 2007) gave little or no attention to the issue of language of instruction. Kelly (1991, 112–113) noted that "steps now being taken both officially and unofficially suggest that the steam has gone out of the movement supporting English as the medium of instruction. However, a formal repudiation of the policy may not materialize for some time because of the resources that have been invested in using English for instruction, particularly for the production of instructional materials".

In 1996 a new government policy document was published containing the auspicious declaration that "all pupils will be given an opportunity to learn initial basic skills of reading and writing in a local language" (GRZ 1996, 40). And two decades later, this change of policy was further articulated in a National Literacy Framework that "recognizes Zambia as a multi-lingual society, where the use of local languages and English co-exist as part of formal and informal communication. Therefore, while initial literacy will be provided in local languages, learners will also be introduced to oral English and later transition to reading and writing in English" (GRZ 2013, 2). A new curricular initiative designed to implement this plan was described as "a quiet revolution" (Tambulukani et al. 2001).

The New Breakthrough To Literacy (NBTL) was a mother tongue immersion course with early exit into English, adapted from a model developed after the end of apartheid in South Africa (BTL n.d.). This was first pilot tested in 1999 with encouraging results in Zambia's Bemba-speaking, predominantly rural Northern Province. In 2001 a further adapted version of the course was piloted in three indigenous languages (Bemba, Lozi and Nyanja) across four rural districts and the city of Lusaka, again with results deemed "very encouraging and … finalization of materials was done in April 2003 before rolling out to every school countrywide in February 2004" (Sampa 2003, 11). Considerable resources were invested in generating teaching materials in the seven selected indigenous Bantu languages and in teacher retraining. Concurrently, a systematic evaluation was conducted on a nationwide sample of over 5000 learners spread across 58 districts. The scores of Grade 1 learners in the designated local language and of Grade 2 learners in English were markedly improved (Sampa 2003).

While the model that inspired the NBTL curriculum was based on research in a sociocultural context more similar to that of Zambia than was the English medium immersion curriculum of the 1970s, in both cases the evidence collected through pilot implementation projects in Zambia was too narrowly focused. The success rate of NBTL documented by Sampa (2003) was not maintained over subsequent years, and there was growing consensus among researchers, technical assistance personnel and government policymakers that the "early exit" feature of the BTL curriculum was preventing many learners from achieving strong enough mastery of initial literacy for it to transfer into a second language (Cummins 1979). With the decision taken to extend the use of local languages as instructional media through at least the first four grades, the Ministry's attention has since shifted to instructional methods, teacher training and production of instructional materials. Similar concerns have become a focus of systematic evaluation projects in Kenya (Piper et al. 2018), Mozambique, Namibia, Ethiopia, Tanzania and Rwanda (Clegg and Simpson 2016).

Community-Based Support for Children with Special Educational Needs

The pattern of educational provision in Zambia at independence for children with needs arising from a disability was phrased in terms of "educating the handicapped" (McGregor 1967). It was institutionalized in a few separate (mainly residential) facilities, each dedicated to children who fell into one of the categories of visually, hearing, physically (mobility) or mentally (intellectually) handicapped. These facilities were entirely run by non-governmental bodies, many of them explicitly religious, and catered to a small minority of the children with such disabilities eligible for special education. By 1981, the government had begun to complement this institutional, non-governmental provision with a number of classrooms attached to regular, mainstream primary schools staffed by teachers each trained at a local college in special education techniques for a single category of childhood disability.

Concern with the limited access to such specialized education prompted government policymakers in conjunction with UNICEF, to request the University of Zambia, in the International Year of Disabled Persons (1981), to conduct a survey of prevalence of childhood disabilities in order to establish the magnitude of the need. The multisectoral committee charged with responding decided on ethical grounds to insist that the activity be conceptualized as a campaign designed to provide at least some minimal service to those identified as needy. The following objectives were established for the National Campaign to Reach Disabled Children: "to raise the level of public consciousness of the special needs of disabled children; to establish comprehensive provincial registers of disabled children; to lay the foundations of nation-wide health and education services for disabled children; and to supply technical aids and prosthetic devices to as many disabled children as possible and to train the children and their families in the use of such aids"(Serpell et al. 1988, 118).

The government assembled an inter-ministerial taskforce to conduct the campaign, with a technical support team based at the University, which provided four types of contribution: elaboration of policy options, development of technical assessment instruments, short-term training of 52 multidisciplinary District Ascertainment Teams and evaluation of impact. The teams were deployed for 6 months and examined a total of 11,000 children aged 5–15 reported by their families at schools and health centres around the country. A total of 7,100 were ascertained as severely disabled and registered. Each child was assigned a provisional diagnostic category and care plan, including referral to specialists and relevant family training packages published by WHO.

While international agencies were speculating worldwide that up to 10 per cent of children of school-going age might have special educational needs, the proportion of children enrolled in special education in Zambia was less than 0.1 per cent. The magnitude of this service gap was slightly moderated by the data collected in the campaign. Projecting from the 7,100 children ascertained as "severely disabled", taking into account reporting centres that were not visited due to logistical problems, it yielded an overall prevalence rate of 2.12% (Fryers 1986), i.e. 36,000 children as

against the 1,200 actually receiving special education. Thus, even by a conservative estimate, increasing current special educational provision by 100% would cater for only 1 in 15 of those in need. Even to increase current provision tenfold, a highly improbable target, would only cater for one in three.

One radical alternative to the gradual expansion of existing institutionally based provision was the concept of community-based rehabilitation (CBR) promoted by WHO (1983). The key principle of CBR is to rely on the family and neighbourhood into which the child is born as the base for any service provision. Affordable, immediate coverage of the majority of needy children and their families was a major theme of the WHO's early advocacy of CBR. But other, perhaps more significant, advantages can also be claimed for it relative to typical institutionally based service provision (Serpell 1986). These include acknowledging and fostering family commitment to the welfare of a disabled child, cultivating the growth of parental confidence in meeting the child's needs, focusing on the child as a whole person, recruiting community involvement in the process of (re)habilitation and ensuring continuity of care over the lifetime of the individual. Like the use of indigenous local languages for initial literacy instruction, the CBR approach has the potential to strengthen and build on the sociocultural resources of families and local communities.

"By explaining these benefits and illustrating them with local case studies, the university researchers raised the consciousness of policymakers in the government that viable alternatives existed to the present pattern of institutional service, and that these deserved consideration in the context of long-term planning." (Serpell and Jere-Folotiya 2011, 219)

At a national conference assembled to brief provincial heads of the three participating government ministries on what had been learned in the campaign, a vision was presented for refocusing the pattern of educational, health and social service provision for children with severe disabilities. District Ascertainment Teams deployed during the campaign would receive additional training in how to orient families and their local communities for the implementation of a CBR approach to individual program planning. Case studies were presented of pilot projects in two rural districts in which such itinerant teams had been deployed, with statistics on the coverage achieved and videotaped illustrations of service quality (Nabuzoka 1985).

Apart from hosting site visits during the short-term initial training of the District Ascertainment Teams, specialized centres had very little involvement with the campaign, a strategic oversight that was only partially addressed in a series of consultative meetings after the initial phase. However, the key significance of the expertise located within those centres came into focus when considering prospects for longer-term follow-up of the campaign, and a perspective of complementarity was adopted. A number of explicit suggestions were made at the national conference for how to integrate the CBR approach with existing, centre-based services (Serpell 1986). However, despite the promising results of pilot CBR projects and several consultative meetings among professionals (Nabuzoka 1986), a national program of community-based rehabilitation for the disabled was never formally established. Moreover the implications of the detailed information compiled in the campaign district registers for immediate local action were only used systematically for

service development in the three districts in which pilot projects were conducted. Elements of the approach, however, informed various interventions in Zambia by non-governmental organizations throughout the 1990s, receiving formal advocacy support by the British NGO, Action Disability and Development as reported by Frost (1999), and as recently as 2011 were being applied in a home-based learning program for severely disabled children in Lusaka (Mushole 2012).

Despite the explicit articulation of ways in which CBR could incorporate and derive strength from the existing specialized centres, the main focus of national policy for CSEN throughout the three decades following the national campaign remained "more of the same" – i.e. expansion of the number of specialized units and of training of teachers to operate them. The failure of policy to realize the innovative and cost-effective potential of community-based outreach methods can be attributed in part to the conservatism of government officials and professionals trained in institutionally based methods of service provision. In addition two paradoxical programmatic constraints appear to have diverted attention from the key needs of CSEN: "the principle of affirmative action to ensure equity to prioritize action to redress the disadvantages faced by girls (PAGE), and by children orphaned by the AIDS pandemic (OVC)" (Serpell and Jere-Folotiya 2011, 212). Arguably, the goals of expanding educational access for children with special needs on the one hand and on the other hand expanding access for girls or for orphans and vulnerable children are part of the broader agenda of educational inclusion (Booth and Ainscow 2016). Indeed many of the children identifiable as having special educational needs were and still are girls, vulnerable and orphans. Yet, in the process of operationalizing activities and prioritizing funding allocations, they were often construed as competing projects rather than as facets of a single enterprise.

Another influence on the national government's policy approach to meeting the needs of children arising from a disability was Zambia's adoption of the international Salamanca Declaration (UNESCO 1994), with a heightened emphasis on the principle of inclusion, which is often narrowly operationalized as "mainstreaming". As a result, statistical reports on the sector shifted away from monitoring the proportion of CSEN who receive education to the proportion of children enrolled in school who are identifiable as CSEN. National data collected in recent years are cited by the government as indicative of progress in the degree of inclusion, with the percentage of the total school population represented by CSEN rising from 1.1% in 2002 to 6.0% in 2009.

Culture, Politics and Science in Policy and Planning

When viewed from the perspective of applied social science, both of the strands of social change in Zambia described above display slow and uneven trends of development and implementation of policies whose scientific rationale was already clear in the 1980s. Various types of explanation have been offered for this: cultural hegemony, international domination, class struggle, conservative resistance to change,

entrenched interests, economic resource constraints, competing priorities, lack of political or technical leadership and failures of consensus building.

Two broad lessons about how best to apply scientific evidence in setting targets and monitoring implementation may be drawn from the Zambian experience:

1. Pay close attention to contextual factors in designing applications of scientific theory to public policy.
2. Use multidimensional criteria to evaluate pilot projects.

But the context of planned social change is not just a background variable. When policymakers decide that a pilot project is promising enough to warrant "going to scale" there is a temptation to treat the project plan as blueprint. Korten (1980) has argued from experience in Asia that more successful attempts to scale up promising projects have benefitted from adopting a "learning process" approach. Hence a further general principle may be to:

3. Build gradual change into the process of scaling up interventions, allowing for localized fine-tuning over time.

The momentous policy decision taken in Zambia in 1965 to abandon a fairly well-established national curriculum and replace it with English immersion from Grade 1 onwards was justified by some on the grounds of moderating politically dangerous ethnic rivalries and economic necessity. But, at a deeper level, it represented a convergence between hegemonic beliefs perpetuated by English-speaking Australian and British expatriate technical "experts" and a pragmatic strategy of the new African nationalist government for dismantling the colonial legacy of racially segregated schooling. The political weight of both those factors declined quite rapidly in the 1980s, but the entrenchment of the policy required a "revolutionary" approach to reverse it. The government's strong policy statement (GRZ 2013) backed by international assistance from USAID might seem to indicate that the battle has now been won, and the principle reaffirmed that all children should receive initial literacy instruction in a familiar language. But stability cannot be guaranteed in this contentious domain, given "the pervasive, gate-keeping role and symbolic value of the colonial or world languages in education and national life; <and> the competing influence of proprietary schools where the colonial or world language is used as the medium of instruction" (Akinnaso 1993, 280).

Williams (2013) attributed the prolonged stagnation of language-of-instruction policy reform in Zambia to systematic resistance by an elite who construed their mastery of the language of power, English, as a key resource for maintaining their privileged socioeconomic status. Moreover, in years ahead English competence may play an increasingly significant part in economic mobility for Africans, as "old hegemonies, grounded in the nation state and modernity, are clearly being challenged in a very fundamental way within the interactive and inter-dependent global economy" (Rassool 2013, 122). A 2014 UNICEF desk review of language in education across 21 countries in Eastern and Southern Africa highlights the widespread coexistence of two features, "diametrically opposed to one another"(Trudell 2016, 282): an official national policy in favour of using local languages as the medium of instruction and

actual classroom practice favouring the use of an international language (usually English) as language of instruction from the earliest grades of primary school.

Two other important policy challenges received no attention in Zambia's National Literacy Framework (GRZ 2013): plurilingual instructional methods and harmonization of orthographies across the various Zambian languages. Most Zambians are able to communicate in more than one of the indigenous languages or dialects (Kashoki 1982), and by the time they enter Grade 1, most urban children whose family does not speak at home the particular variety designated as medium of instruction are quite familiar with it as the local lingua franca (Serpell 1980). One strategic entry point may be to legitimize the widespread existing practice of "translanguaging" (García 2009) by acknowledging it in teacher training and educational materials (Clegg and Simpson 2016; Banda 2017). Proposals for the harmonization of orthographies across several Bantu languages in the region, including those widely spoken and used in education across national borders, have been formalized (Banda et al. 2008) and discussed among scholars and policymakers. But progress in implementing such recommendations is delayed as much by conservative attitudes as by financial constraints.

If the premise that systematic research evidence has the potential to inform good policy is to be realized, a further general principle is that policymakers should:

4. Recruit technical input into the detailed design of policy and implementation processes.

But how should such input be mobilized and constrained? Indicators of specific targets are a powerful conceptual tool for clarifying the focus of quantitative social scientific research. However, several analyses have questioned whether it is appropriate to phrase such targets in purely descriptive terms (de Beeck 2015). Dawes et al. (2007), for instance, argue for rights-based indicators to monitor child well-being in South Africa. In practice, if the target is conceptualized in terms of accountability to stakeholders, a monitoring tool may come to behave like a guide to practice and influence the quality of service provision towards more immediate positive impact on beneficiaries/clients (Sammon et al. 2015). Systematic assessment of children with special needs should be judged not just in terms of descriptive accuracy but also by whether it informs a productive dialogue among families, local community leaders and professionals trained in health, education and social development.

One of the widely recognized potential benefits of precision in specifying indicators is to clarify interpretation of the meanings of underlying concepts. However, such clarification is sometimes gained at the expense of acknowledging difficulties in arriving at consensus among multiple stakeholders. For instance, the counting of heads as an index of educational inclusion may yield an illusion of progress if insufficient rigour is applied in the application of criteria for designating a learner as having educational special needs. The growth of attention to mainstream inclusion in Zambian public educational policy has the potential to increase the level of access to education by CSEN. But, in the absence of consistent application of reliable

assessment methods to individuals, aggregate statistics cannot provide a valid index of progress. Currently reports of growing numbers of CSEN in mainstream schools are published without any specification of the criteria used to classify a child as having special needs and without any indication of the level of support being provided to enable them to overcome the special challenges to learning posed by their particular disabilities. In order to achieve the policy objective of "successfully educating …children … who have serious disadvantages and disabilities", government officials responsible for the design and application of reporting systems need to work closely with experts familiar with the demands of hands-on educational practice to focus attention on the fine-grain details of children's development that must be indexed as criteria for assessing intervention outcomes (Serpell and Jere-Folotiya 2011).

5. Co-construct opportunities for productive dialogue among diverse stakeholder groups.

Rosga and Satterthwaite (2009) construe indicators as "only an instrument" that "should only be used as food for social and political debate". But, as Merry (2011) notes, there is a risk in the current Western ideological trend towards according greater credibility to quantitative research that "indicators replace judgments on the basis of values or politics with apparently more rational decision-making on the basis of statistical information". This risk may be especially great in countries like Zambia, where only a very small proportion of the public have access to advanced formal education and basic principles of statistics are often disregarded by high-status public officials when interpreting quantitative data. In this context, while disproportionate cognitive power may rest with elite technical specialists, they are correspondingly more vulnerable in the arena of political decision-making to being marginalized as members of a guild, whose accountability to relatively transparent processes of peer review is misunderstood by the lay public as a cloak for in-group self-interest.

In contemporary Zambia we need to acknowledge multiple angles and layers of opinion in the formulation and interpretation of public policy, which influence the processes of communication, rather than formulating the challenge as simply building consensus between two contrasting camps (scientists versus laypeople). Members of the broad categories (politicians, government bureaucrats, researchers and technical specialists) in the twenty-first century display a much wider range of knowledge, attitudes and affiliations than was the case in the 1980s. Moreover many of them double as human service professionals, clients or parents of service clients, with legitimate claims to representative authenticity. The growth of economic inequality within the nation has tended to blur the distinction between geographical and cultural variation, intensifying the need for local accountability to communities placed at risk. Contextual responsiveness is needed in the establishment of national and regional frameworks within which scientific evidence will be genuinely applied systematically to the formulation and implementation of public policies that serve the broad progressive principles of inclusion and local accountability.

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Part IV
Policy and Systemic Change: Networks, Partnerships, and Capacity Building for Development Science

Chapter 22
Capacity Building for Sustainable Development: Coherent Concepts of Universities' Third Mission as a Parameter

Laura Brandt, Barbara Schober, Veronika Somoza, and Christiane Spiel

Introduction

The 2030 Agenda in the form of 17 Sustainable Development Goals (SDGs) covers a wide range of topics, from social to economic aspects and from environmental features to rule of law and governance. As the world of today is home to the largest generation of children and young people in history, addressing children and youth needs and rights is key to ensuring sustainable development (United Nations 2016). Thus, increasing investment in positive children and youth development and ensuring that no one will be left behind will help assure that they can become themselves agents of change.

Since the beginning of the twenty-first century, a new vision concerning youth development emerged that moved away from a focus on deficiencies toward the understanding of youth as resources to be developed (Larson 2000; Lerner et al. 2003). However, today the vast majority of children and young people live in low- and middle-income countries (LMICs), and many face challenges in terms of accessing opportunities for education, health, decent employment, and civic participation. While children and youth development has seen significant progress in the past two decades, success has not been evenly distributed. Thus, we are faced with the challenge to find sustainable ways to support all children and young people but

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especially excluded groups (Huebner et al. 2016), in unveiling their full potential for successful, healthy, and positive development. This chapter specifically focuses on the question how individual researchers and universities may contribute to this challenge and more generally to the realization of the SDGs.

In this context, the 2030 Agenda emphasizes the need and requirement for international and interdisciplinary (research) cooperation as well as close collaboration with policymakers, practitioners, and other stakeholders to provide solutions to sustainable development challenges. Indeed, intensive cooperation between researchers, policymakers, and practitioners has been identified as the key factor for successfully and sustainably implementing research-based prevention and intervention programs (Datnow 2005; Roland 2000; Spiel and Strohmeier 2011). However, the establishment of high-quality and fruitful collaboration is difficult, and there are several challenges in transferring research evidence into practice (Spiel and Schober 2017). Therefore, the first part of this chapter examines the question how scientists can be mobilized to collaborate, to tackle issues in partnership with policymakers. To illustrate this point, we pick up the recommendations by Spiel and colleagues (Schober and Spiel 2016; Spiel and Schober 2017; Spiel et al. 2016) for a systematic six-step procedure, which summarizes the most relevant actions to be taken and issues to be considered on the part of (individual) researchers. In addition, we present an example of how such a process has been conducted in the course of implementing a national strategy against violence in the public school system.

Engagement of researchers and research progress, respectively, also requires support from universities. Moreover, universities are called upon to integrate the SDGs into research agendas at all levels for achieving a *sustainable* improvement of young lives globally. In modern, knowledge-based societies, universities as major producers of knowledge and innovation play a key role in achieving economic growth and social progress (Pinheiro et al. 2015a). While not a new debate (Castells 2001), particularly since the beginning of the twenty-first century, universities are increasingly requested to use the results produced by their first (teaching) and second mission (research) to help resolve the growing challenges societies and local communities are faced with (Bleiklie et al. 2007; Pinheiro et al. 2015b; Schober et al. 2016). This obligation has been codified as the *Third Mission* of universities. Third Mission may be understood as a collective term for activities, which use scientific knowledge to help shape societal development. This involves taking responsibility, actively and consciously, for the society on whose behalf universities are working (European Commission 2011). The second part of this chapter explores the Third Mission's potential as a "window of opportunity" for increasingly focusing on the 2030 Agenda in new research and for integrating the SDGs into research agendas at all levels. We present examples from the University of Vienna on how Third Mission activities may be aligned to help improve young lives globally.

In closing, we argue for the combination of a systematic implementation process with a basic attitude of researchers and universities, resembled by the Third Mission, in the design and enhancement of systems that provide solutions to sustainable development challenges.

Transferring Research Evidence into Policy and Practice

The educational context is a key research focus providing knowledge that directly contributes to the improvement of young lives globally. Studies clearly indicate the importance of high-quality education for society as a whole (Hanushek and Kimko 2000; Heckman 2008) and also for the individual (Oreopoulos et al. 2006; Oreopoulos and Salvanes 2011). Moreover, there is high agreement among researchers, policymakers, and practitioners that kindergarten and school are the places to foster positive development and to apply research-based intervention (Kratochwill 2007; Spiel and Schober 2017). However, in educational practice, many reforms seem to be ill-designed "education experiments" rather than sustainably planned processes of change (Schober et al. 2016). Likewise, children and youth development has seen significant progress since the turn of the century; however, various excluded groups of children and young people (e.g., refugees, ethnic minorities, indigenous children and youth, or those with disabilities) are not benefiting from global progress (Huebner et al. 2016).

These examples illustrate that while research-based interventions have considerably gained importance and impact in past decades, their transfer into practice often fails (Fixsen et al. 2009). As a consequence, the field of implementation research emerged – where implementation is defined as the "specific set of activities designed to put into practice an activity or program of known dimensions" (Fixsen et al. 2005; p. 5).

However, despite the large body of empirical evidence referring to the importance of implementation and growing knowledge of the contextual factors influencing implementation, diverse barriers for a successful transfer of scientific knowledge to practice persist (e.g., Forman et al. 2013; Schober and Spiel 2016). To cope with this situation, Spiel and colleagues proposed a systematic six-step procedure (PASCIT) that requires researchers to design and develop intervention programs based on a field-oriented and participative approach (Schober and Spiel 2016; Spiel and Schober 2017; Spiel et al. 2016). The particular feature of this approach is the systematic consideration of needs of the environment and target group, respectively, and the inclusion of stakeholders' perspectives on all levels within the whole conceptualization of an intervention as well as during its evaluation and implementation (Schober and Spiel 2016), rather than simply transferring a program to practitioners at the end of the research process.

Based on theoretical and empirical knowledge (Glasgow et al. 1999; Greenhalgh et al. 2004) combined with experience in intervention and implementation research (Finsterwald et al. 2013; Gradinger et al. 2015; Schober et al. 2013; Schultes et al. 2014), six steps have been proposed as parts of the dynamic process of transferring research evidence into practice, with multiple sub-processes, feedback loops, and interdependencies. They are mostly to be taken successively; however, some may be performed simultaneously (Spiel et al. 2016). While none of the PASCIT steps is a new consideration or demand by itself, we argue that this *coherent* approach, which

integrates the perspectives of all stakeholders from the beginning, can help mobilize scientists to collaborate to tackle issues in partnership with policymakers.

In the following, we describe each step with reference to the specific challenges pertaining to efforts in improving young lives globally.

Mission-Driven Problem Recognition (P)

The basic step is to identify desiderates for research; i.e., what are the relevant research topics in a given context. Considering the realization of the SDGs for children and youth development globally, the research focus is (mostly) on societal challenges, which requires sociopolitical responsibility as the researchers' basic mind-set.

Ensuring Availability of Robust Knowledge on How to Handle a Problem (A)

The availability of robust and sound scientific knowledge is a fundamental precondition for working on a problem but also for any kind of transfer. This is by no means a simple demand – researchers have to be experts in the relevant field with excellent knowledge of theory, methods, empirical findings, and limitations as well as on the political dimension of research (Spiel et al. 2016).

Obviously, a large body of knowledge is available on the (positive) development of children and young people. However, there is still a lack of knowledge on the role of context in addressing inequity in human development (Raikes and Britto 2017), and updating data on the situation of children and youth within and across countries needs to be a prime focus of the research agenda of developmental scientists to enable assessing how policies reach or affect children worldwide (UNICEF 2015).

Identification of Reasonable Starting Points for Action (S)

Many intervention programs and measures do not work everywhere and at all times (Meyers et al. 2012). Thus, if a problem has been identified (step 1) and all relevant insights for initiating changes are available (step 2), a promising starting point for interventions and their implementation has to be identified. This again requires expertise in the relevant scientific field combined with a differentiated view of prevailing cultural and political conditions, including potential problems and limitations (Spiel et al. 2016).

When focusing on sustainable children and youth development in LMICs, we need to understand the interlinkages and interdependencies with social systems that can support integrated policy planning, in addition to enabling conditions, which are required to foster effective multi-sectoral action in LMICs. Moreover, proposed solutions need to be context specific in dealing with barriers that constrain positive child and youth development outcomes in particular contexts of LMICs.

In addition, researchers need to know whether the respective institution where an (research-based) intervention is to be applied (e.g., kindergartens and schools, which are key contexts to foster positive development) is ready for intervention and, if not, how to prepare them.

Establishment of a Cooperation Process with Policy makers (C)

Stable alliances with all stakeholders and especially with policymakers are a crucial aspect in order to successfully transfer research evidence into practice.

The particular challenge in this step is that research often follows its own intrinsic logic, which considerably differs from political thinking. In addition, successful development and implementation of research-based intervention in practical settings involve various stakeholders and not only require close cooperation, persistence, and time but also money (Spiel et al. 2016). Thus, a well-planned and deliberate process of establishing cooperation and building alliances is necessary. At this, researchers need to consider that government and policy are influenced by values, beliefs, and ideology as well as habits and traditions, beyond evidence (Davies 2012). Policymaking is embedded in a bureaucratic culture and is forced to respond quickly to everyday contingencies and to oftentimes very limited resources, especially in the case of LMICs. Consequently, researchers have to find ways to integrate the relevance of evidence within the context of these various influencing factors, which is frequently an unfamiliar demand to them.

Coordinated Development of Intervention and Implementation (I)

This step is a long process and the centerpiece of the PASCIT approach. Steps 1–4 represent prerequisites to enabling a coordinated development and implementation of evidence-based measures that are being performed in a theory-driven, ecological, collaborative, and participatory way. The perspectives of all relevant stakeholders – i.e., practitioners, policymakers, government officials, public servants, and communities – have to be included in this development process. To enable inclusion, researchers have to be able to communicate within individuals with different expertise than their own and meet them as equals (Spiel et al. 2016).

Again, this is an oftentimes unfamiliar process for researchers. In many fields, it is uncommon to work together with stakeholders right from the beginning, and this requires new conceptions, among others, of research planning (Meyers et al. 2012). When focusing on the improvement of young lives, it is particularly important to include children's and youth's perspectives, integrate participatory monitoring and accountability, and enable children and youth to collect data. When children and youth help determine what data is collected and are enabled to collect data themselves, the resulting data can be more responsive to local contexts. Given that children are frequently excluded due to their different capacities and ways for engagement, enabling environments for children and youth need to be promoted so that they can meaningfully participate in the 2030 Agenda's implementation (UNICEF 2015).

The challenge in this step is to find a good balance between realizing a wide participation and at the same time maintaining scientific criteria and standards of evidence (Schober and Spiel 2016).

Transfer of Program Implementation (T)

In the course of an increasing use of theoretical approaches to better understand how and why implementation succeeds (or not), several models and guidelines have been proposed by implementation science for this final scale-up step (e.g., Fixsen et al. 2013; Meyers et al. 2012; Nilsen 2015). Nilsen (2015) identified three aims for the use of theoretical approaches in implementation science – (1) describing/guiding the process of translating research into practice, (2) understanding/explaining what influences implementation outcomes, and (3) evaluating implementation – and five categories of theories, models, and frameworks. These include process models, determinant frameworks, classic theories, implementation theories, and evaluation frameworks (Nilsen 2015). Picking up the findings provided by implementation science and applying respective implementation frameworks are highly recommended in order to achieve sustainability when implementing programs in the field of developmental science.

Hereinafter, we illustrate how this dynamic process of transferring research evidence into practice can be realized by means of the ViSC Social Competence Program within the frame of a national strategy.

ViSC as an Exemplar for the Realization of the PASCIT Approach

The main goal of the evidence-based ViSC program is to prevent violence and to foster social competencies in Austrian secondary schools (for details on the program, see Strohmeier et al. 2012). For sustainable implementation, a cascaded

train-the-trainer model was developed and applied: scientists train ViSC coaches, ViSC coaches train teachers, and teachers train their students.

Before the development of the ViSC program, most initiatives taken to prevent violence in Austrian schools were not theoretically based, project goals were imprecisely formulated, and programs were rarely documented and evaluated (step 1 of the PASCIT approach: problem recognition). Concomitantly, robust knowledge on how to handle the problem (step 2) – i.e., how to take on violence at school – was available as research-based prevention and intervention programs have been developed in several countries and evaluated regarding their efficacy and effectiveness (for an overview, see Spiel et al. 2016). However, application of such programs showed that for *sustainable* violence prevention activities on a national level supported by governments are required (step 3) (Spiel et al. 2011). Consequently, the ViSC team established a cooperation process with the Federal Ministry of Education (step 4) and subsequently received a mandate to develop a national strategy for violence prevention in the Austrian public school system.

In developing the strategy, a key focus was on applying theory-based and empirically evaluated programs and on systematically integrating perspectives of stakeholders actively involved in violence prevention and intervention (e.g., school psychologists, social workers, teacher unions). In 2008, the implementation of the national strategy became part of the coalition agreement between the two governing parties. In order to facilitate a coordinated development of intervention and implementation (step 5), the ViSC program's implementation model was developed concurrently by the same researchers who developed the ViSC program. It takes the context and culture of the Austrian school system as well as the concrete situation at each specific school into account. To ensure successful transfer of program implementation (step 6), the implementation quality of the ViSC program was evaluated by means of implementation fidelity (i.e., the degree to which the intended content of the intervention is implemented) and participant responsiveness (attendance at the program; Schultes et al. 2014). The evaluation results were used to adapt the program in a participatory approach together with coaches and school principals by identifying conditions that are necessary for implementing the ViSC program with high fidelity and high participant responsiveness. By now, the ViSC program has been implemented in Romania, Cyprus, and Turkey by local researchers. The promising initial evaluation results highlight the usability of this program (with high fidelity) in LMIC.

Universities' Role in Relation to Society: The Third Mission of Universities

While the PASCIT approach focuses actions to be taken and issues to be considered on the part of researchers, universities play a key role for the engagement and support of individual researchers. Furthermore, they provide the necessary framework for integrating the SDGs into research agendas *at all levels.*

When debating universities' role in relation to society, reference is frequently made to the implicit social contract between science and society (Schober et al. 2016). Europe's universities are increasingly expected not only to produce new knowledge but to do so with social and economic perspectives in mind (e.g., European Commission 2006). This has been codified as the obligation of universities to perform a Third Mission in using the results produced by teaching (first mission) and research (second mission; e.g., Bleiklie et al. 2007). What appears new in the conception of the Third Mission is a (more) *systematic* response to demands of multiple stakeholders.

The Third Mission may be seen as both the challenge and the chance for universities to strengthen their active engagement with society and economy. Such a process may elucidate opportunities to integrate the SDGs into research agendas and for increasingly considering the 2030 Agenda for (new) research.

The 2030 Agenda and its SDGs represent a new long-term perspective on global development, and science, technology, and innovation are fundamental ingredients of such a shift. These ingredients are represented by the Third Mission's key priorities (Schober et al. 2016):

1. Targeted use and transfer of scientific knowledge to help resolve diverse societal challenges
2. Transfer of technologies and innovations in the form of cooperation with public and private enterprises

Active engagement in the Third Mission may have diverse objectives and orientations, depending on the respective focus of an activity. In the following, we will describe the conceptualization of the Third Mission at the University of Vienna, which is the largest university in the German-speaking area. In addition, examples of Third Mission activities will be provided, which highlight how the Third Mission maybe aligned to help improve young lives according to the SDGs.

At many large universities such as the University of Vienna, multiple activities directly relevant to the Third Mission are ongoing. However, these are frequently not systematically documented and interconnected. Against this backdrop, the project "Third Mission of the University of Vienna" is being conducted.

The Third Mission of the University of Vienna

The starting point of the project "Third Mission of the University of Vienna," commissioned by the rectorate (first phase of the project: March 2016 February 2018), was a clear commitment of the University to the Third Mission in the Development Plan 2020 (University of Vienna 2016). The aim of the project is to (1) develop a specific content-related profile for the Third Mission of the University of Vienna, (2) conceptualize an explicit framework for a sustainable implementation of the Third Mission at the University of Vienna, and (3) develop concrete measures for implementing the Third Mission, including identifying and valorizing relevant activities,

making them visible and interconnected, and developing quality assurance measures.

In a first step of the project, qualitative interviews with the deans of all faculties and centers at the University of Vienna were conducted in order to identify promising starting points for a systematic and successful realization of the Third Mission and to define priorities (Third Mission of the University of Vienna 2016). In sum, the interviews demonstrated that the deans have a positive attitude toward the Third Mission and acknowledge the increasing necessity of knowledge and technology transfer. Numerous ongoing Third Mission activities were identified; however, those were frequently neither visible nor interconnected. From the interviewees perspective, sustainable implementation of Third Mission activities requires (a) explicit appreciation of such activities, (b) extended (international) cooperation with societal actors and public and private enterprises, (c) improved communication of existing activities and competences, both within the university and externally, and (d) additional resources to meet these challenges. The deans' concurring opinion was that the content alignment of the Third Mission of the University of Vienna cannot be defined in a normative way. While the overall institutional strategy should be specified by the University management, defining the specific content should be entrusted to the faculties and centers.

Examples of Third Mission Activities with a Focus on Improving Young Lives

A second round of interviews was conducted with members of the university, who are involved in innovative Third Mission activities. We chose two examples from all activities reported in these interviews (for additional good practice examples, see http://thirdmission.univie.ac.at/en/) to highlight how Third Mission activities may be aligned to improve young lives. The first activity addresses the needs of children and young people from an excluded group. The second example focuses on climate change and migration, both of which (adversely) affect a large part of children and young people living in LMICs. A third example is the national strategy against violence and the application of the ViSC program already described above.

Example 1 Limits and opportunities of multilingualism

In the course of the seminar "Limits and Opportunities of Multilingualism," teacher education students of all fields develop competences in the area of multilingualism (person responsible at the University of Vienna: Eva Vetter, Department for Teacher Education). The aim is to enable students in supporting non-native German-speaking children and adolescents in acquiring the educational language German in the context of individual and societal multilingualism. Concomitantly to the seminar, students develop learning offers for adolescent refugees. These offers are intended to provide them with learning opportunities beyond the school context

and, at the same time, promote their language development. They are being implemented by the students at the UniClub (organized by the Vienna University Children's Office GmbH), where adolescent refugees (13–19 years of age) have the opportunity to practice German, study, meet other adolescents, and receive support (for a more detailed project description, see http://thirdmission.univie.ac.at/en/).

The seminar is an important learning opportunity for teacher education students to enhance their language didactic skills as well as for their personal development and their dealing with adolescent refugees. The adolescent refugees receive important learning incentives in the context of the UniClub. At this, they are perceived as young people who are eager to learn. They are being supported and do not have to fight for an opportunity to participate in education (Third Mission of the University of Vienna 2017b).

Example 2 Building resilience through translocality: Climate change, migration, and social resilience of rural communities in Thailand (TransRe)

The TransRe project aims at deciphering the relations between migration, translocality, and social resilience to climate change (person responsible at the University of Vienna: Patrick Sakdapolrak, Faculty of Earth Sciences, Geography, and Astronomy). It starts from the assumption that, regardless of the accuracy of the projections of future environmental changes, migration is already occurring and will continue to be a major dynamic of global change. The project takes a fresh perspective on the environment-migration nexus: while population movements often have a negative connotation and are seen in the context of conflict, migration is also connecting people, transforming places, and facilitating flows of knowledge and resources. Thereby, migration creates networks and interconnected translocal spaces. Through this intensifying translocal connectedness, the ability of households and communities to respond to climatic risks and to sustain their livelihoods and well-being – that is, their social resilience – has the potential to be strengthened. TransRe focuses on resource-dependent households and rural communities that are particularly vulnerable to climate-related risks. The research design follows place-based as well as multi-sited fieldwork approaches and seeks to generate empirical evidence based on case studies carried out in Thailand and in the places of destination of migrants (for further information on the project, see http://www.transre.org/en/).

The data base on vulnerability, resilience, strategies, and resources in dealing with climatic risks, which has been developed in the course of the project, is an important informative basis for practitioners, decision-makers, and (further) research projects. In addition, a tool kit for policymakers and practitioners is being developed, which will guide the integration of migration-based social resilience support into community development and climate change adaptation plans and policies. This tool kit integrates an existing instrument, which is already being used in organizational processes of the Raks Thai Foundation, a member of CARE International, which has been working in Thailand since 1979 with the aim to strengthen the capacity of the poor and disadvantaged. Thereby, structural anchoring of the tool kit at local level could already be achieved. If the use of the tool kit

proves effective, it will be transferred to other countries and contexts (Third Mission of the University of Vienna 2017a; Translocal Resilience Project 2014).

The first example presented here has a direct impact on the well-being and positive development of children and young people. The project supports young refugees in acquiring the educational language German and thereby in accessing opportunities for education. In addition, the seminar prepares teacher education students from all fields for the challenge multilingualism can pose in educational institutions. This is an example of integrating topics relevant to society in teaching (service learning) and thereby enabling a better preparation of (international) students for taking over responsible tasks in politics, society, and economy (Zgaga 2009).

The second example moves away from a child-specific focus. **By aiming, among other things,** to understand the influence of translocal networks on the ability of households to respond to climatic risks and to create and search for new livelihood pathways, it is possible to identify which network structures are conducive to social resilience and which might restrict it. In the long term, such information has the potential to strengthen resilience of children living in LMICs who are adversely affected by disasters related to climate change and large population movements due to conflict.

Recommendations for Engaging Universities and Scholars in Building Capacities and Skills to Contribute to the Realization of SDGs

The increasing demand for (European) universities to use their knowledge from research and teaching to fulfill their Third Mission in society and economy represents an important "window of opportunity" for increasingly focusing on the 2030 Agenda in new research and for integrating the SDGs into research agendas at all levels. As exemplified above, at many universities there is a variety of Third Mission activities already being carried out in research and teaching. However, there is a lack of distinct Third Mission profiles, conceptualized as deliberate and programmatic directions to face the high complexity of societal challenges.

While there is no uniform definition of the Third Mission, it has been conceptualized as pertaining to a different set of university responsibilities, particularly wider participation, social engagement, and direct contributions to society and economy (Nedeva 2008; Pinheiro et al. 2015a). Thus, for a successful realization of the Third Mission, taking over sociopolitical responsibility is not only required of the individual researcher (as in step 1 of the PASCIT approach) but of the entire university, articulated in the university's mission statement (E3M 2012). This basic mind-set is an important condition for researchers to engage in the Third Mission and in the realization of SDGs, respectively. Furthermore, establishing a coherent concept of the Third Mission at universities is a parameter for building capacity for *sustainable* development.

Besides broad engagement of individual scientists, a successful realization of the Third Mission requires providing a conceptual framework for the "third task" of universities and systematically implementing it in the form of specific measures (Lassnigg et al. 2012; Pausits 2015; Woollard et al. 2007). In this context, it needs to be considered that the Third Mission's implementation at universities is considerably influenced by the cultural, legal, social, and infrastructural conditions of a region and country, respectively, as well as the type and extent of support for related activities (Berthold et al. 2010). Thus, a systematic and successful realization requires establishing cooperation and building alliances with the various actors and stakeholders – within the university but also externally – who are involved in the development and implementation of (Third Mission) activities in diverse settings (Spiel et al. 2016). Therefore, we argue for adopting the PASCIT approach in developing coherent concepts of universities' Third Mission and thereby building capacity for sustainable development.

Evidently, ensuring availability of robust knowledge (step 2 of the PASCIT procedure) and identifying reasonable starting points for action (step 3) are dependent on the specific (research) focus and the relevant practical field of an activity. However, establishing a cooperation process with various stakeholders (step 4) beyond a specific activity and the duration of a project, respectively, likely will increase sustainability not only of the cooperation itself but potentially also of (Third Mission) activities. Successful and widespread cooperation will undoubtedly be a key success factor for the 2030 Agenda as achieving the SDGs is a shared responsibility and global partnership is crucial to ensure their successful implementation (United Nations 2016). Likewise, global partnership is crucial for ensuring the success of a shift toward socially responsible universities at global and local levels. In order to take full advantage of these partnerships, universities and other higher education institutions need to become more open, socially engaged, and strategic by identifying local and global challenges and opportunities. By balancing the global with the local (also referred to as the "glocal" mission), universities can form deeper global partnerships and integrate research with education and their Third Mission to find sustainable solutions for a large section of the world population to be educated, earn a living, and increase their standards of living in a safe and ecologically balanced environment (Global University Network for Innovation, GUNi 2017).

Successful transfer of scientific knowledge to practice and into the wider field of public policy requires academics to communicate their research results to a wider audience, beyond their discipline. Mainstreaming this ability as a key qualification criterion of researchers may help establishing a common language between researchers and diverse stakeholders, including children and youth. Finally, we recommend utilizing existing guidelines and frameworks from the field of implementation science when implementing programs from the field of developmental science. This will contribute to overcoming the current situation of mostly isolated knowledge and findings and to moving toward a holistic framework for the improvement of young lives globally (Spiel and Schober 2017).

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Prof. Veronika Somoza's research relates to the identification of bioactive food compounds that are involved in regulatory processes of digestion and satiety. She is currently serving as vice dean of the Faculty of Chemistry and as head of the Department of Nutritional and Physiological Chemistry. She is the chair of the Christian Doppler Laboratory of Bioactive Aroma Compounds and received the FEMA Excellence in Flavor Science Award in 2016.

Prof. Christiane Spiel's research is on lifelong learning, gender stereotypes in education, school bullying, and quality management in the educational system. She is an expert in evaluation and intervention research, knowledge transfer, and implementation science. She has received several awards, e.g., the Austrian Cross of Honor for Science and Arts first class. She is the president/chair of several international scientific advisory boards (e.g., of the Swiss state secretary for Education, Research, and Innovation).

Chapter 23
Capacity Building of Developmental Scientists for Realization of the Sustainable Development Goals

Esther Foluke Akinsola and Deepali Sharma

Transforming the world over the next 15 years' (United Nations Department of Economic and Social Affairs 2015a, b), as set out by the United Nations, focuses on a set of universal goals covering a whole range of sustainable development issues. Given the complex challenges facing the world today, the 17 Sustainable Development Goals (SDGs) and 169 targets call out for global partnerships and action by all countries. One such course of action envisaged to promote international development is capacity building – A process encouraging countries to make and carry-on their own long term development by building upon knowledge, skills, and resources of their people (Science and Technology Committee Report 2012).

Capacity building, a dedicated target within the 17th SDG, aims to "Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the sustainable development goals, including through North-South, South-South and triangular cooperation"(United Nations Department of Economic and Social Affairs 2017).

As developmental scientists we are interested in understanding the role of developmental science in facilitating progress on the SDGs from a life span perspective. We are keen to understand how developmental science can better support partnerships between nations by building capacity of researchers at the grassroots, eventually resulting in a world with greater opportunities for the most vulnerable and marginalised of in the society.

The Earth Summit (1992) recognized women, children, and youth as two out of the nine major groups who would help in creating sustainable societies for future generations. In this paper we will also be exploring how professional training in the

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field of developmental science influences policy decisions for the overall well-being and development of the stakeholders – children and youth – by looking at some case examples. We answer the above questions by evaluating developmental science programs of some of the leading universities in the world. We also examine the capacity building initiatives of some of the key developmental science societies and understand how they organize platforms that call for collaboration among researchers across countries. We begin by giving a brief overview of the sustainable development goals, how they differ from the Millennium Development Goals, and focus on SDG target number 17.9 dedicated to capacity building.

Sustainable Development Goals

The SDGs build and expand on the 2015 Millennium Development Goals (MDGs). The eight goals provided by the MDGs focused on improving the economic, health, and social conditions of people in low-income countries and bettering their future prospects (UN Millennium Development Project 2005). The United Nations (2015) in its Millennium Development Goals Report stated the global mobilisation behind the MDGs to be the 'most successful anti-poverty movement in history'.

During the decade long execution of the MDGs (2005–2015), there were many successful outcomes, especially for women and children. With an outreach of more than one billion people, some of the positives of the MDGs include the child mortality rate getting reduced by more than half over the past 25 years; the global maternal mortality rate falling by almost half; an impressive rise in primary school enrolment for children (Sub-Saharan Africa had the best record of improvement in primary education of any region since the establishment of MDGs); and reduction in gender differences in primary education in about two-thirds of the developing countries (as an example – 103 girls enrolled for every 100 boys in primary schools in Southern Asia as compared to the earlier 74 girls versus 100 boys) (Galastidas and Sheehy 2015; United Nations 2015). Highlighting the difference made by the MDGs, McArthur and Rasmussen (2017a, b) calculated the rates of progress from pre-MDG period and compared these with rates of progress post the establishment of MDGs. The authors concluded that an estimated range of 21.0–29.7 million additional lives was saved during the MDG era compared with pre-MDG trajectories.

While the MDGs (2000–2015) were successful in providing a framework for promoting global development, significant gaps were left and a focused target of reaching out to the most vulnerable population still remained urgent. The SDGs are envisaged to have a greater outreach and have better mechanisms in place for benchmarking progress in order to measure the gains made and to 'finish the job' (Coonrod 2014) started out by the MDGs. Having been formulated after detailed international dialogues and negotiations, closely involving the middle-income and low-income countries, the SDGs are considered to be universal and holistic.

Given the scope and ambition of the SDGs, the United Nations considers Goal 17 to play an instrumental role in the successful execution of its vision since it is supposed to bind the other goals together. With a focus on revitalizing universal partnerships for development, Goal 17 also looks at capacity building for better measurement and monitoring. One of the criticisms of MDGs was related to data issues and how these needed to be better dealt with. There were concerns voiced related to improving the capacity to analyse, including statistical analysis capacity, institutional reforms, building ability to deal with new data demands and localization of data taking into account the uniqueness of national economies (United Nations Department of Economic and Social Affairs 2015a, b).

Capacity building is a long term investment. Direct support from universities, exchange of experience at the institutional level, NGOs with monitoring capacity and consultants with specific implementation expertise are some of the mechanisms to help support the capacity of future researchers who will participate in achieving the SDGs. In sum, strengthening human resource and institutional capabilities remains the key to capacity building.

As an example of undertaking capacity building initiatives, UN DESA Division for Sustainable Development, since the declaration of the SDGs, has organized several multi-stakeholder capacity building events, consultations and workshops for national and local policy makers. These events have been organized in a number of countries such as Botswana, Chile, Belize, Morocco, Jordan, and Costa Rica to support dialogue and cooperation between national authorities and relevant stakeholder groups. The Division also provides resources to stakeholders to promote national capacity building, including learning materials, substantive submissions as well as details of capacity building activities being undertaken.

Developmental Science and Sustainable Development Goals

While theoretical articles in the domain of developmental science have been published in the last three to four decades, it wasn't until the late 1990s that a formal definition of a theoretical model for developmental science emerged (Cairns et al. 1996). The authors formally define the domain as:

> Developmental science refers to a fresh synthesis that has been generated to guide research in the social, psychological, and biobehavioral disciplines. It describes a general orientation for linking concepts and findings in hitherto disparate areas of developmental inquiry, and it emphasizes the dynamic interplay of processes across time frames, levels of analysis, and contexts. Time and timing are central to this perspective. The time frames employed are relative to the lifetime of the phenomena to be understood. Units of focus may be as short as millisecond, or as long as years, decades, and millennia. In this perspective, the phenomena of individual functioning are viewed at multiple levels – from the sub-systems of genetics, neurobiology, and hormones to those of families, social networks, communities, and cultures. (p.1).

Developmental scientists (from multi and inter disciplinary fields) are in a unique position to contribute towards the success of the SDGs given the focus of developmental science in studying human development across the life span and its application to policymakers and public. Within the SDGs, 14 out of the total 17 goals and 143 targets, directly or indirectly, relate to children's needs and rights ranging from ending poverty and violence in all its forms to health, access to quality education, and employability support (Arisi and Christensen 2017).

The SDGs set out by the United Nations need political will and investment to succeed. They also need policies that are informed by empirical evidence and are the outcome of close collaboration between researchers and policy makers. The member states of the United Nations have stated explicitly that the success of the 2030 Agenda for Sustainability should be based on a scientifically sound and effective approach and have called upon the global scientific community to help set up the scientific basis for evidence-based implementation of this agenda (Dzwonnek and Hacker 2016).

Developmental science has been instrumental in informing and shaping policy in the past and evidence of it was seen in the MDGs as well as the present SDGs. The current goals build upon the knowledge gained in the field, especially related to developmental trajectories and outcomes. For example in SDG 4 (related to learning and education), there is now a focus on lifelong learning as compared to the earlier focus in MDG on just access to education (Raikes et al. 2017). Another example of research making a difference in informing policy can be seen by the report published by the Center on the Developing Child at Harvard University (2014). Their report on science informing policy showcases how research related to early brain development has led to revisiting policy decisions regarding providing young children with a healthy, safe, and nurturing state in life. The findings have also inspired development of intervention and prevention programs for families with young children across the world.

The above examples are not in isolation and there are many success stories of developmental science influencing policy and practice such as improvements in child health, disease outcomes (Sachs 2015) and learning outcomes. However, despite the massive gains made by developmental scientists, the stark reality also remains that these advances, especially those related to measurement, monitoring, and implementation have been made essentially in the developed countries and there are a whole new set of global challenges that scientists need to respond to such as making culturally-relevant contributions and responding to the context.

Global Populations Needing Professional Developmental Scientists The United Nations, in its 2016 report, noted that the world population today is dominated largely by children and young people, with majority of them concentrated in the low and middle-income countries. In these countries, extreme poverty and inequality deny the children and youth opportunities for education, healthy lifestyles, decent employment, civic participation and engagement.

The 2030 Agenda is considered to be more inclusive than the MDGs and with the focus of the SDGs to, 'leave no one behind', there is an even more urgent need for

developmental scientists to reach out to groups who were not a focus of attention in the earlier MDG development process, especially those living in low and middle-income countries. These include persons with disabilities, having refugee status, having migrant status, or belonging to ethnic minorities. Excluded groups located in war-torn and conflict ridden countries are particularly vulnerable and include many countries in Africa and the Middle East such as Liberia, Rwanda, Uganda, Zimbabwe, Ethiopia, Syria, Somalia, and Lebanon. These excluded groups are likely to face persecution because of their beliefs and identities and are adversely affected by disasters resulting from climate change and large population movements due to conflicts. The impact of these critical life events on the mental health and well-being of the people is an area needing urgent attention as is the need for context specific interventions (United Nations 2016).

Marsella (2007) writes, "The challenges of today's world require a new psychology—a global psychology—that recognizes and acknowledges the major global forces and events that are shaping the context of our daily lives, and that acknowledges and prizes the cultural variations in psychologies across the world …" (p.333). Going forward, in order to meet the challenges of the twenty-first century and ensure successful outcomes of the SDGs, researchers will need to learn new skills, conduct meaningful context-based research, and look at issues from different perspectives (Oni 2017).

In fact, it is interesting to note that the majority of developmental science research, conducted on about 10% of the world's population living in high income countries continues to influence programs and ideologies in low and middle income countries (LMIC) (Raikes et al. 2017). Saraswathi (2018) talks about the need for the developmental science curricula to take into account variation in childhood and adolescent experience and modify the curriculum keeping in mind the lives of children across sub-cultures and regions. This modification would require a move from dependency on a largely universal world view and take into consideration systematic study of cultural diversity and relevance (Serpell and Nsamenang 2014).

The Need for Developmental Science Programs

Given the role of developmental science in making contributions to help realize the 2030 sustainable development agenda and secure a voice in the policy framework by providing necessary inputs, focus on the quality of developmental science programs becomes all the more important to build upon the capacity of researchers along with offering scope for better multi-disciplinary partnerships. Collaborations are crucial because developmental science extends beyond the traditional reach of developmental psychology and the life span approach and includes aspects of genetics, neuropsychology, neuroanatomy as well as clinical psychology, among many other disciplines.

Developmental Science Programs in the Minority World Most programs in developmental science offered at colleges and universities are inter-disciplinary and multi-disciplinary and come under the core disciplines. Nature of developmental science programs in the minority world[1] (including North America and Europe) typically focus on how different development factors interact across the lifespan, from before birth into adolescence, adulthood, and old age. Emphasis is also on the biological, cognitive, affective, and social systems that characterize the development of people in a variety of contexts along with focusing on developmental research methodology and prevention and intervention research.

We briefly mention the top ranked developmental science programs in North America and also mention some of the reasons for these departments to feature in the top ranks. Before presenting this list, we will like to reiterate that this is by no means a comprehensive list and does not reflect the breadth and scope of developmental science programs available globally. This is an exemplar at best to capture the content of programs available in one particular subfield of Human Development and Family Science[2] (HDFS) within developmental science as has been reported in the latest Dush Ranking of HDFS programs in North America (Dush 2017). The methodology for reporting the rankings included calculating the average program ranking and average faculty ranking as two different variables for the 59 Universities included in the list. A trimmed mean for the program and faculty ranking was then created followed by examining correlations between the two methods. The graduate studies chair was invited to fill in the survey and rank programs by University and name/groups of faculty.

The top six ranking Human Development and Family Science Departments in North America Universities, based on the raw mean rankings, for 2017 include: Pennsylvania State University (Mean: 4.5), Cornell University (Mean: 4.0), University of California, Davis (Mean: 3.9); University of Illinois at Urbana-Champaign (Mean: 3.8); University of Maryland at College Park (Mean: 3.8); Arizona State University (Mean: 3.7); Northwestern University (Mean: 3.7); Ohio State University (Mean: 3.7); and University of Minnesota (Mean: 3.7).

The above programs not only have a strong focus on lifespan approach but what sets them apart is also their emphasis on capacity building of graduate students in addressing cross-cutting themes of research and getting them ready for their work life. This is related to having a strong statistical core, methods training, publications,

[1] **Majority world / Minority world**: The term 'Majority world' highlights the fact that the majority of the world's population lives in parts of the world traditionally referred to as 'developing' (low and middle income countries). The term 'Minority world' is similarly used to refer to those countries traditionally referred to as 'developed', where a minority of the world's population resides.

[2] In the US the developmental science programs grew up in "land grant colleges/universities" - land and public funds for agriculture, engineering and teaching. Some of the programs started focusing on child development from education schools while others were in home economics originally and were likely to have more focus on the family (A.C. Petersen, **personal communication**, January 26, 2018).

presentations, dissertations, and involving students in research-public engagement activities to bring research into communities.

Developmental Science Programs in the Majority World Developmental science has been critiqued for generating universalized statements about how children develop based on work with a narrow segment of the world's population—namely, white, middle-class children (e.g., Burman 2008; Cannella 1997). In the majority world, where graduate programs and curricula are still largely influenced by Western ideas and theories, increasing criticism is being voiced related to explaining human nature in universal terms and normalization of discourses surrounding people whose lives are vastly different (Abubakar and Van de Vijver 2017; Menon and Saraswathi 2018). Scholars are pushing for more contextual, critical and sociologically grounded conceptualizations that include a consideration of larger structural variables, such as class, race, gender and ethnicity (Menon and Banerjee 2018). Researchers from Africa, as an example, argue that the limited data coming from Africa is 'Eurocenteric' in nature and is based on theoretical backgrounds, data collection methods, and measurement procedures developed in North America and Central Europe (Marfo 2016; Pence and Marfo 2008). Nsamenang and Lo-oh (2010) go as far as to say that Sub-Saharan Africa based knowledge remains largely unchartered territory. As a result graduate students find it difficult, if not impossible, to generate and disseminate knowledge, uniqueness, and competencies about their culture (Nsamenang 2005).

Even though developmental science programs in the majority world continue to be influenced by Western pedagogy and curricula, there is a welcome change permeating through departments offering developmental science and applied fields. This change will influence scholarship and capacity training of students and their outreach efforts after completion of graduate programs. For example, the Centre for Early Childhood Education and Training, Ambedkar University, India focuses on evolving indigenous theoretical and empirical models addressing needs of children in diverse and plural contexts. With an emphasis on research, evaluation, capacity building, and advocacy, the program looks at training students in contextually sensitive methodologies. Similarly, the Advanced School of Education, Yaounde University in Cameroon focuses on developing an indigenous African Psychology influenced by local wisdom and cultural and social capital. Likewise, Pontificia Universidad Catolica de Chile, Chile has made a significant impact on the cultural and scientific community in Chile through its focus on research related to native ethnic minorities. Having grounding in programs relating to the local context and methodologies is likely to have students and researchers with capacity to make a difference at the micro level.

Capacity Building in Developmental Science and the SDGs

In order to be truly universal, developmental science needs to recognize and accommodate multiple influences and variability in human experiences across cultures (Abubakar and Van de Vijver 2017). Also, instead of remaining independent schools of thought, study programs from both majority as well as minority world could benefit from each other's experiences and rich traditions. Raikes, Yoshikawa, Britto and Iruka (Raikes et al. 2017) call for the global exchange of financial as well as human capital and consider these to be critical factors propelling the successful execution of the Sustainable Development Goals.

If the voice of developmental scientists has to be heard, then there is an immediate need to strengthen departments, build upon local scientists' research and application capacities, generate funding, and nurture the discipline within a local context. Also, international cooperation on open access to science, data sharing, technology and innovation are crucial. Partnerships across universities, local and national non-governmental organizations and multilateral agencies will further ensure that appropriate actions being taken towards the realization of the SDGs.

Another strategy of fostering capacity, especially among the early career scholars, is by establishing a network of researchers across countries who readily share knowledge and expertise related to research, data, and measurement. It is important to remind ourselves as researchers that capacity building is a process and while there might not be an immediate return on the investments, there will be long term gains made which are all the more important towards success of the 2030 agenda. Below, we discuss some of the organizations and Societies promoting capacity building of early career scholars.

International Consortium of Developmental Science Societies (ICDSS) (http://intlconsortiumdevelopmentalscience.org) Collaboratively formed in 2012 by 9 scientific societies (and the Jacobs Foundation), the Consortium currently includes 11 member organizations that have an international scope and an interdisciplinary focus on human development. Recognizing the need for organizations to take a global perspective, the goals of the Consortium emphasize using developmental science to inform programs and policy making at the global and regional levels. The consortium held a policy-focused consensus conference in 2017 and is now developing a journal.

International Society for the Study of Behavioral Development (ISSBD) (www.issbd.org) Aimed at promoting scientific research of human development using a life span perspective, the Society holds biennial meetings presenting latest scientific research findings along with providing opportunities for multi disciplinary collaborations. The Society has a wide international outreach and its membership is well represented across different continents from sixty countries. The hallmark of the Society remains in the investments it is making towards fostering and building capacity of early career scholars. This is done via organizing pre-conference workshops during the biennial Meetings, offering mentorship programs, providing travel

grants to assist early career scholars to attend meetings, encouraging publishing in the biannual bulletin of the Society as well as the journal, and holding regional workshops.

Elaborating on regional workshops, an example of the capacity building initiatives of ISSBD, several workshops were organized in Africa over the last two decades. The premise was to support the research capacity of human development researchers in African universities and research institutions; increase the number of Ph.D. trained African researchers in human development and building their capacity to undertake high quality research; improve the quality of research training and mentorship; and support the development of sustainable research networks in human development in Africa. An impact evaluation report of these regional workshops in Africa (Serpell et al. 2017) suggests an improvement in the quality of research outputs of early career scholars who had participated in the workshops and an increasing presence of African developmental scientists in the international arena.

In a report on a regional workshop held in Brazil and supported by ISSBD, the authors (Santo and Da Cunha 2017) elaborate how the workshop, organized 10 years ago in 2007, helped in shaping the professional and personal development of early career scholars from North, Central, and South America. International publications, collaborative data collections, joint presentations, and changes in approach towards teaching and research were some of the outcomes as reported by the participants of the workshop 10 years on.

European Association for Research on Adolescence (EARA) (www.earaonline.org) EARA focuses on adolescent research in areas such as socialization, adolescents at risk, mental health, identity formation, and research methodology. The summer school, organized by the Association to train doctoral researchers, remains its distinguishing feature and is considered to be an important training opportunity for early career scholars. During the summer school, a seasoned research professional is paired with a doctoral student such that not only do the students present their ideas to the senior Professor but also receive feedback related to their research. Since its inception in 2001, EARA (in collaboration with Society for Research on Adolescence) has organized 10 summer schools and at each of the schools, there are specific sessions focusing on methodological advances and professional development of early career scholars.

Society for Research in Child Development (SRCD) (www.srcd.org) SRCD**,** the oldest developmental science society established in 1933 but engaging in activities even earlier on, aims at advancing research related to infant, child, and adolescent development. The society also encourages a multifaceted community of researchers and practitioners in the field of child development by developing new leaders in the field. It has a particular focus on providing avenues for developmental scientists from underrepresented ethnic and racial groups and promoting international collaborations across countries. The Society has several awards for deserving scholars and some of the awards include: Senior Distinguished Contributions

Awards; Early Career Research Contributions Awards; and Outstanding Doctoral Dissertation Awards. Other capacity building initiatives of SRCD includes UNICEF/SRCD Handbook Collaboration and SRCD Teaching Mentorship Program. In the Teaching Mentorship Program, early career teachers are paired with a more experienced faculty member from another institution and there is a reciprocal exchange of ideas.

Society for Research on Adolescence (SRA) (www.s-r-a.org) The Society aims at advancing understanding of adolescence and enhancing the well-being of youth in a globalized world. It also focuses on promoting collaborations and international connections for the next generation of adolescence scholars. SRA in collaboration with European Association for Research on Adolescence (EARA) and European Association of Development Psychology (EADP) sponsors summer schools where they bring together early career and senior scholars from US and Europe for research programs and networking opportunities. The Society also presents awards to deserving scholars such as the Early Career Research Award, Mid-Career Award for Research Excellence, and Outstanding Mentor Award.

Regional Groupings The last decade has seen the establishment of Psychology societies in Southeast Asia (e.g.: ASEAN Regional Union of Psychological Societies), the Caribbean, Latin America, and Africa. What is unique about these organizations is their explicit focus on capacity building and training for the local community thereby focusing on issues which are relevant to the perspectives and needs of the region (Bullock 2015).

Conclusion – Promoting Goal 17 of the Sustainable Development Goals

As we move towards 2030, what is becoming increasingly clear is that traditional approaches to promoting partnerships might not be enough to meet the objectives of SDGs. Bilateral partnerships that focus on increasing capacity at the grassroots and decreasing dependency on external support need to be promoted. The world today is more interconnected than ever before, therefore improving access to technology and statistical capacity is a crucial means to promote innovation.

Learning from the limitations related to execution of the MDGs, especially those concerning review and monitoring frameworks, there is a need to retool the processes of execution. The SDGs are driven by human development targets and indicators. Researchers have a unique opportunity to steer progress by being part of a global network working towards significant improvements in local, national, and global data collection, processing, and dissemination using both existing and new tools to improve the monitoring systems. An example includes the latest mechanism of effectively integrating non-official or non-national level data sets into indicators

useable at the national scale (Sustainable Development Solutions Network 2017). This mechanism, known as data reconciliation, is still at the pilot stage but is visualized to improve efficiency across sectors including human development indicators.

The SDGs clearly delineate 'what' needs to be done in order to end extreme poverty and achieve a better world by 2030. Partnerships focusing on 'how' the SDGs will be achieved will be the driving force for success. There is room for innovation and the scientific community, steered by its long tradition of carrying out research that matters, can make a difference.

A recent report published by Sustainable Development Solutions Network Australia/Pacific (2017) has brought out a guide for Universities, higher education institutions, and the academic sector related to getting started with the SDGs in Universities. The report recognizes the important contributions made by the education sector towards the achievement of SDGs and delineates benefits of becoming engaged. It showcases how Universities can become champions of sustainable development and play a leading role in the implementation of SDGs.

The above report also provides interesting case studies of actions taken by leading institutions to enhance capacity of the students. Some examples include: (i) having an online engagement platform for students aimed at inspiring leadership and action on the SDGs (Monash University, Australia); (ii) Doctorate in Sustainable Development for the SDGs (Curtin University, Australia) considered to be the first of its kind and supported by leading experts in government, non-government organizations, aid agencies, and corporations; (iii) student leadership forum on the SDGs (Monash University, Australia) to bring together student leaders and staff to discuss how student action on the SDGs could be better recognized, connected, and amplified; (iv) teaching SDG1 as part of course work at graduate level (The University of Sydney, Australia); (v) mapping curriculum through the SDGs (Victoria University of Wellington, New Zealand) to review 3000 plus courses of the University through an SDG lens; and (vi) recognizing SDG impact in University awards (Western Sydney University, Australia) to report the outstanding work being carried out of mainstreaming and promoting the SDGs.

Realization of UN sustainable development goals for children, adolescents and youths requires a shift in focus of capacity building of developmental scientists, new partnerships, and international solidarity. As allies with a shared purpose, yet different strengths and resources, countries need to focus on the world's common agenda as reflected in "The future we want" outcome document of the Rio + 20 conference held in Rio de Janeiro, Brazil (Leggett and Carter 2012).

Developmental science has an increasingly important role to play in helping shape the future agenda and there is a paradigm shift in the conceptualization of development – from being seen as essentially economic growth to being conceptualized as human centred sustainable development. Sustainable development is conceptualised as 'three overlapping dimensions, environmental, economic, and social sustainability, with human welfare and well-being at its heart' (Jaipal 2014). As developmental scientists, this is indeed an exciting time to be in.

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Chapter 24
Roles of Multiple Stakeholder Partnerships in Addressing Developmental and Implementation Challenges of Sustainable Development Goals

Paul Odhiambo Oburu and Hirokazu Yoshikawa

Stakeholder Groups in the Development of the Sustainable Development Goals

The current global statistics (e.g., Black et al. 2017; UNESCO 2015; UNICEF 2016; UNICEF Office of Research 2017) suggest that millions of children and youth are at risk for heightened intergenerational impoverishment, reduced learning, and development opportunities and lifelong health problems. The Sustainable Development Goals (SDGs) represent the consensus of all 193 UN member nations to catalyze global solidarity so as to prevent environmental degradation, sustain economic development, and transform human dignity (e.g., by reducing inequality and increasing learning potential possibilities through provision of accessible and quality education; Sachs 2012). Progress toward SDG goals and indicators for children and youth (see introductory chapter for the overview of these) thus require utilization of evidence-based approaches, development of effective governance structures, accountability, policy coordination, and *multiple stakeholder partnerships* (MSPs). SDG 17 explicitly names global partnerships, coalitions, and alliances as central means for the actual implementation of Sustainable development goals (Hazelwood 2015).

The development process of the SDGs itself was a particularly complex negotiation involving national governments, community members, civil society

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organizations, the private sector, and researchers (Raikes et al. 2017). The process of development of the SDGs also incorporated each of these kinds of functions. Networks supported their development – such as the Sustainable Development Solutions Network, which aimed to bring information from the research community to inform the SDG conceptualization and wording from outside the United Nations process. Coalitions developed on each of the areas of the 17 goals and many more. Coalitions also developed among nations – with complex subgroups of nations providing statements to influence the process at various points between 2012 and 2015. And finally alliances emerged between different kinds of partners, e.g., example, in some cases much larger countries with the small island nations of the Pacific, uniting around common concerns about environmental degradation. One characterization that distinguishes networks from coalitions and alliances states that networks focus on sharing and disseminating information, coalitions focus on coalescing and advocating around a single issue, and alliances focus on joining organizational capacity to benefit different goals of each partner organization (Stone, personal communication).

The complex nature of interactions involved in global partnerships, coalitions, and networks suggests that many theories are potentially relevant to multiple stakeholder partnerships. Some of these theories focus helpfully on function of partnerships (e.g., Andonova and Levy 2003). Others, however, focus on organizational decision-making to examine processes of participation, conflict, and resolution that are involved in complex, multicomponent networks, coalitions, and alliances. We will utilize both the functionalist and organizational decision-making frameworks to explain the potential roles of multiple stakeholder partnerships in the achievement of Sustainable Development Goals. The functionalist approach (e.g., Andonova and Levy 2003) assumes that the potentials for MSPs derive mainly from the pooling of resources by multiple stakeholders, sharing of core knowledge, expertise, skills, competencies, and assets to create scaled-up solutions to global problems (Hazelwood 2015; Sachs 2012). For example, the attained success of the Millennium Development Goals (e.g., reductions in HIV/AIDS, malaria, and tuberculosis incidence; increased access to education; reduction in infant mortality) was in part due to coordinated action of MSPs (Sachs 2012). The combination of resources and competencies, coordination of research on effective interventions, government policy action, international NGO and civil society mobilization, and global and regional finance mechanisms also worked together to achieve the 50% reduction in under-5 mortality that occurred between 2000 and 2015 (Sachs 2015; You et al. 2015).

Paradoxically, while these reported successes were related to widespread multiple stakeholder engagements (Sachs 2012; United Nations 2015b), the conceptual and implementation challenges of delivering on the SDG targets also derive in part from the difficulties involved in the coordination of efforts and the range and scope of stakeholders involved in the finalization and implementation of the Sustainable Development Goals (Sachs 2012). For example, the sheer number of goals, targets, and indicators, some have noted, is not possible for any single country to track, particularly those with low levels of resources. The 15-year span of the SDGs also poses a challenge to policy makers working within much shorter-term limits and a

general pattern of rapid turnover in the line ministries that are often delegated with responsibility for both monitoring and policy implementation in SDG areas (Jabaren 2008; Sachs 2012; Salter 2012).

This suggests that theories based on organizational decision-making to examine processes of participation, conflict, and resolution that are involved in complex, multicomponent networks are equally relevant. Participatory processes for national policy making have been well-established in some areas relevant to SDG 4. National child development policy (see Vargas-Barón 2015) and the national-level participatory budgeting movement with roots in Latin America but has now been implemented worldwide are other examples of stakeholder partnerships in the public policy development (Novy and Leubolt 2005). These examples show that community members can be involved in prioritizing goals including financing for community development – and in some cases national development. The surfacing and resolution of conflict are the focus of many theories from the areas of community organizing to national-level negotiation of policy priorities. Some of these negotiations include structured processes of stakeholder engagements, prioritization, and inclusion (Gregory and Keeney 1994; Riege and Lindsay 2006).

While acknowledging the complex nature of multi-stakeholder partnerships, we utilize these two theories to discuss the participation involving each of five major sets of stakeholders –national governments, community members, civil society organizations, the private sector, and researchers – in terms of their stakes in working toward SDG progress and challenges linked to their engagements in public policy development. Three types of MSPs – at the global, regional, and national levels – corresponding to the three levels of indicator monitoring encouraged by the SDG process are also discussed.

Major Stakeholders Involved in Country-Level SDG Progress Related to Children and Youth

National Governments

Due to the universal nature of the SDGs – pertaining to all children and youth within and across societies – national governments play perhaps the primary role in ensuring progress on targets and indicators. National governments also have a social responsibility to their own people requiring prioritized engagements that take into account national priorities alongside other global commitments (UNESCO 2017). Summaries of national-level SDG efforts since 2015 (e.g., Nairobi, Bangkok, Cairo, Dakar, and Kathmandu) have indicated that many national governments have integrated achievement of the SDG4 agenda into their national policy making (Naidoo 2017). Several other national governments (e.g., Afghanistan, Kenya, India, Colombia, Peru, and Ghana) are also implementing data and monitoring and evaluation-based innovations to make progress on SDG 4, suggesting that national

policies can also make progress on the SDGs related to child and youth development (Naidoo 2017).

Most governments have been integrating SDGs into their policy process in some way – not generally simultaneously on all 17 goals but many in particular areas. This indicates that the very complex global MSP process in development of the SDG is translating into implementation at the national level in various country contexts. For example, in the case of SDG Target 4.2 (the early childhood development target), the countries of Colombia and Peru have initiated the first nationally representative studies of observed early childhood education quality and child development, as part of their monitoring processes for SDG 4.2 (Ministerio de Educación Nacional de Colombia 2017). By combining measurement of quality and child development, each country's Ministry of Education aims to identify areas for quality improvement in ECE and link their actual improvement efforts to high-quality data (reliable measures of observed quality and direct assessments of early childhood development). Within each country, MSPs have involved existing coalitions (e.g., the inter-sectoral commission on early childhood policy of the country of Colombia, which includes multiple line ministries and also representation of some civil society organizations), partnerships between local and external researchers with the Ministry of Education, and perhaps, most interestingly, cross-country learning and communication across the lead ministries in Colombia and Peru. In addition, the global MSP of the Measuring Early Learning and Quality Outcomes (MELQO) project (a partnership between UNESCO, UNICEF, the World Bank, and the Brookings Institution) gave input at several key points and made connections of these two countries to their work in one other Latin American nation (Nicaragua). Similar efforts are underway in the countries of Tanzania and Ghana (UNESCO 2016).

Civil Society Organizations

Civil society organizations (CSOs) are either formal or informal entities (e.g., community-based organizations, non-governmental organizations, advocacy organizations) that have come together and are committed to fulfill a common need (Mbeye 2005). CSOs can play a critical role from outside government in the implementation of Sustainable Development Goals. The CSOs were brought into the SDG agenda from the development phase of the goals, due to their advocacy potential, extensive networks, previous engagements in service provisions, and monitoring and evaluation possibilities that were viewed as crucial in generating widespread acceptability of the sustainable development agenda (United Nations 2015a). They have been instrumental in dissemination of relevant information about SDG through training and advocacy, translating global targets into results at the local level and playing accountability and service delivery functions at local and national government levels (UNESCO 2017; United Nations 2015b). For example, South African CSOs articulated the needs of the poor and also engaged in external monitoring of

progress of South African government toward the attainment of Sustainable Development Goals through data collection, community engagements, reporting, and information dissemination (Motala et al. 2014).

Several limitations pertaining to the participation of the CSOs into the sustainable development agenda have also been identified. These include limited coordination between CSOs, sometimes inadequate financial disclosures, and problems of aligning different and competing interests (UNESCO 2017). Others include weak internal monitoring and evaluation structures and biased agendas of CSOs that may not necessarily be in tandem with local or national interests and SDG goals but allied more to CSO donors' considerations. All these could potentially hamper the effectiveness of the CSOs involvement in the implementation of the Sustainable Development Goals. Finally, CSOs, due to their emphasis in many cases on advocacy, may be limited in the quality of their data collection and reporting. And of course, some authoritarian regimes suppress CSOs, representing a core challenge to their very existence (UNESCO 2017).

Regional networks such as Latin American Network of Civil Society Organizations for Education (REDUCA) represent one promising approach to addressing the challenges facing CSOs. This network of multiple national-level CSOs focuses on education advocacy and policy in the region. This network has devoted work since 2015 to the measurement of quality and learning in the context of the SDGs. Regional convenings and linkages to multiple universities and research centers, along with their core network of CSOs and advocacy organizations, are advancing the role of data in advocacy to hold governments accountable in SDG 4 progress (REDUCA 2017).

The For-Profit Private Sector

Although national governments have primary responsibility in the provision of education, the private sector in many countries plays a major role in the provision of education. Of special interest are the religious institutions, businesses, and social entrepreneurs with a profit emphasis that have invested in a social good such as education.

Although research is still emerging on the for-profit private sector involvement in the provision of a private good such as education, some of the available documents (e.g., UNESCO 2017; Moumne and Saudemont 2015) suggest that implementation challenges of SDG4 targets partly derive from this actual for-profit private sector engagement in public service provision. For example, the for-profit private sector involvement in education was reported to jeopardize access and equity considerations in Chile, Uganda, Ghana, and Morocco (Moumne and Saudemont 2015). Although reliable national data are lacking, the involvement of Bridge International Academies in Kenya, Uganda, and Liberia was reported by some organizations as exacerbating inequalities based on socioeconomic status, location, and gender (Right to Education 2017).

In addition, the low-cost private education sector in South Asia and sub-Saharan Africa has emerged as a powerful force even in countries that have made extensive efforts to expand universal primary education during the MDG and now SDG era (Kabay 2017; Moumne and Saudemont 2015). In addition to their formal costs, some have hidden costs (e.g., uniforms, textbooks, undeclared fees such as teacher motivation) that have made it difficult for some low-income parents to pay for other services (e.g., rent, food, and accessing health care), or prioritizing boys' over girls' education when they enroll their children in such schools (Right to Education 2017; Moumne and Saudemont 2015). Yet in these ways, they often replicate public education schooling in low-income countries, which often continue to involve fees, despite the widespread adoption of school-fee abolition in regions such as sub-Saharan Africa (Kabay 2017). Perceptions of parents regarding quality of private vs. public schools in areas with both options also drive the growth of this sector.

Although research on actual observed quality of private vs. public schools in the same areas is only just emerging, one recent study showed lower quality of teacher-child interactions in the private ones (Wolf et al. 2016). However, alternatively the private sector can also be a source of innovation, potentially driving improvements in new ways that at-scale government systems cannot often do. In addition, the private sector by definition represents organizations that respond in some way to the needs of local markets (i.e., of the public). For example, some private sector schools provide instruction in languages not represented in government-provided education (Srivastava 2013).

Finally, the private sector can represent a powerful advocacy voice in favor of investment in public programming. Business coalitions, for example, sometimes push for improvements in health, education, and early childhood development – as these initiatives ultimately serve to build a more effective workforce (Watson et al. 2015). Private finance can also serve complementary functions to government sources and foreign direct investments. Private sector involvement in the SDG4 implementation thus presents challenges as well as new opportunities for collaborations, capital, and knowledge exchange between themselves and national governments. On the downside, proliferations of private-public partnerships have also complicated the implementation possibilities to national governments who now have to deal with many actors.

Researchers

The SDGs are comprised of indicators, which are essentially research variables of a particular kind (designed for national monitoring and tracking of progress on national and global goals for societies). Thus, they centrally implicate research – particularly in the areas of measurement and assessment (Raikes et al. 2017). The national actors responsible for indicator choice and tracking are researchers in government statistics ministries, who are in contact, respectively, with UN agency statistics ministries responsible for each specific SDG and the UN Statistical

Commission. The UN agencies responsible for SDG 4 are UNESCO (for all indicators not under 4.2) and UNICEF (for 4.2) (Global Alliance to Monitor Learning 2016).

Among research areas, developmental science, in particular, can provide relevant data on how measures of health, development, and learning called for in the SDGs are influenced by context and culture at different stages of the life cycle (Raikes et al. 2017). Most policies relevant to child and youth development in the SDGs ultimately are experienced at the level of the daily settings of family and community life – household, village, school, clinics, and interactions with health workers, teachers, or other providers. Developmental scientists have unique expertise in measuring not only child and youth development and learning (which are core to Goal 4 indicators in Targets 4.1, 4.2, 4.4, and 4.7) but the characteristics of contexts that can facilitate these positive indicators of development.

Research institutions, in close coordination with relevant stakeholders (e.g., youth, communities, civil society organizations, national governments, UN agencies, and other development partners), can also play a pivotal role in the achievement of SDG4 and other child- and youth-relevant goals and targets. They can reveal patterns of success and inequity across countries or regions and by advancing scientific knowledge on child and youth development and learning in diverse contexts (Raikes et al. 2017). This is based on the assumption that research can generate high capacity data systems and results that can then be utilized to bridge the identified gaps and consequently improve the quality and cultural relevance of generated data, monitoring of evaluation systems, educational service provisions, skills acquisition, and learning outcomes called for in Sustainable Development Goals (UNESCO 2017; United Nations 2015b).

In addition, academicians could spearhead peer learning among stakeholders, encourage sharing of information and cross-fertilization of best practices, take lead in the measurement of SDG target achievements, and potentially broaden policy dialogues to include discriminated groups, such as children with disabilities (UNESCO 2017). They could also support national governments in achieving SDG targets by promoting inter-sectoral dialogues and also through contributions to the development of national education and cross-sector plans, policy-relevant research networks, research-practice partnerships, and capacity and leadership development in diverse contexts (UNESCO 2017; United Nations 2015b; Raikes et al. 2017).

For researchers to play a productive role in national-level progress, they must collaborate with other stakeholder groups discussed here. The nature of engagement could include inclusion of research consumers (e.g., community members in qualitative participatory research approaches) in the design, execution, and outcomes related directly to inter-sectoral needs. These could include identifying relevant research questions, determining and refining targets, measuring of targets, and providing partnership forums to review research progress or disseminate results. The reality on the ground has been that the focus of developmental researchers has been the needs of one third of the world's population (Yoshikawa 2017). Researchers have also been clinging to their age-old practice of generating knowledge for their own consumption rather than for policy purposes. Researchers have also preferred to stay in their own comfort zones or discipline silos. Interdisciplinary research

approaches and engagement with stakeholders (e.g., community actors, policy makers, and implementers) are more often theoretical rather than practiced options (Chedly 2015).

In order to increase the utility of research, questions derived solely from behavioral theory, for example, must be supplemented by the questions that policy makers have about what works and under what circumstances to produce national-level progress on SDG indicators. Research programs that pay attention to and balance these perspectives are vital in engaging practice and policy. Discipline-specific incentive structures in developmental science often emphasize peer-reviewed publication requirements at the expense of increasing practical relevance of research, especially in bridging the gap between theoretical knowledge, practice, and policy implementation (Yoshikawa 2017).

Academicians' special roles in this context would include but not limited to creating and satisfying demands for evidence-based data and also providing required monitoring and evaluation services. This, however, will be a function of the ability of developmental scientists to provide theoretical and critical contributions that could help generate relevant and verifiable data. In addition, academicians could also widen their visibility possibilities by creating forums for increased practical and conceptual engagements between researchers and policy makers. All these initiatives would presumably increase the effectiveness of MSPs and also the achievements of SDGs.

Community Members

Community members are both the most important stakeholder and potentially principal actors in the successful implementation of the Sustainable Development Goals (UNDP 2014). Success of the SDG4 agenda depends on their active involvement. Similarly, eradication of social injustice, environmental protection, and economic development hinges upon their active involvement, participation, and acceptability of community members to become "social change agents" (UNDP 2012). The lessons learnt from United Nations- led "Equator Initiative" that brings together governments, civil society, businesses, and grassroots organizations to advance nature-based local sustainable development solutions suggest that community members could effectively deliver services in culturally appropriate manner for the SDGs. Community members could also play important roles in SDG goal achievements due to widespread communication networks for behavior change, increased accountability possibilities at local scale if successfully engaged, and widespread potentials for scaling up effective transformations (UNDP 2012).

The reality on the ground, however, has been that the power of the local actions for sustainable development that would occur if community members were effectively engaged has been underutilized. More often than not, communities are passive participants or consumers of "empowerment programs" and research processes and outcomes derived from elsewhere. Findings from the United Nation's

Community–Based Resilience Analysis (CoBRA) assessments suggested that local organizations can effectively be utilized as delivery platforms for SDGs. Communications, partnerships, networks, and potentials for scaling up effective transformations were widely available in local contexts. However, most MSPs propoor development agendas ignored grassroots' knowledge or experiences. Instead, input of local technical stakeholders and representatives is sometimes excluded from program designs and working interventions. Sometimes there are also mismatch between community priorities, policy and planning needs, and that of other MSPs (UNDP 2014).

For child and youth development, actual participation of community members including children and youth is important to advance the SDG agenda. The Sustainable Development Solutions Network Youth organization, for example, led by youth from countries around the world, focuses on developing curricular materials that can be promoted by youth themselves in systems but undertaken in partnership with other educational leaderships (Youth for SDGs 2017). Other examples exist of youth committed to raising and advancing the SDG agenda within countries. The UNDP's "Empowered Youth, Sustainable Future" initiative that incorporates youth input in governance, decent job creation, and resilience building in Brazil, Cameroon, and Sri Lanka is one such example (UNDP 2016).

Multiple Stakeholder Partnerships (MSPs)

We discuss three types of MSPs – at the global, regional, and national levels – corresponding to the three levels of indicator monitoring encouraged by the SDG process (U Statistical Commission 2017).

Global MSPs

As we noted previously, the development of the SDGs made use of one of the widest MSP to date in history. The United Nations Conference on Sustainable Development (Rio + 20) was an example of a successful indicator of a global MSP first setting forth the conceptual framework for the SDGs – based on the three pillars of economic development, social inclusion, and environmental sustainability. Everyone in the world with Internet access was provided opportunity to give input into the process through "The World We Want" web platform.

Since the passage of the SDGs, global networks relevant to progress on child and youth development indicators include several major examples. The UN system has of course played the leadership role as the primary global actor responsible for coordination of the SDG. In the arena of health, the "Every Woman Every Child" network developed a strategy for indicator development and monitoring in 2016. Led by the WHO, this network's coordinating committee solicited input from

multiple universities, development partners, funders, and NGOs to produce an indicator development and monitoring strategy (Every Woman Every Child 2016). This global strategy has managed to increase funding and mobilized hundreds of partners to improve policies and service delivery (WHO 2017). As with other global partnerships, difficulties are likely to be experienced in tracking and implementing non-binding financial commitments. Accountability problems and inequities in donor disbursements resulting in high-burden countries receiving little funding are other likely challenges (UNESCO 2017).

In the area of global measurement, the UNESCO Institute for Statistics convened the Global Alliance to Monitor Learning (GAML) as the multi-stakeholder network to guide that agency's support of national, regional, and global measurement and monitoring of SDG 4 (the learning and education goal; Global Alliance to Monitor Learning 2016). This network brings together UN member states, researchers, funders, and education statisticians from UNESCO and UNICEF to work on the development of measurement strategies for SDG indicators in education, spanning early childhood to adulthood. Implementation challenges faced by the global measurement network include an unprecedented challenge from the SDGs for assessments that can be cross-country, comparable not just across rich countries (cf. the longstanding Program for International Student Assessment (PISA) and other examples) but within and across the vast range of low- and middle-income countries.

In the area of early childhood development, the Early Childhood Development Action Network (ECDAN) is a global MSP. Formed in 2016, the ECDAN major focus was to bring together the global advocacy organizations, UN agencies, and international and regional development partners with historically strong activity in ECD. This Network began planning for the definition of an overall results framework, strong evidence-based interventions to be scaled at national levels, a data systems guidance and measurement strategies for ECD indicators, and approaches to policy and finance that could support global progress on Target 4.2 (the early childhood target) and related ECD indicators and targets under other goals. The ECDAN included researcher specialists from developmental science, across psychology, economics, and related disciplines.

The Sustainable Development Solutions Network is an example of an MSP network outside the UN that played a role in the development of the SDGs between 2012 and 2015 and is now involved in input in the implementation of the SDGs. Founded by Jeffrey Sachs and under the auspices of then-Secretary General Ban Ki-Moon, the SDSN aimed to bring research and technical expertise from outside the UN system to bear on the SDG process. The "theory of change" was that with fewer stakes, the global research community, in particular, could provide coordinated input on the evidence base in each of the potential areas of the goals. Twelve thematic networks evolved within the SDSN between 2012 and 2015. Its main aims were to synthesize the evidence base in each of the 12 areas of goals, produce comprehensive reports as well as policy briefs to communicate that evidence, and report to the Open Working Group of the United Nations on the Sustainable Development Goals, the group of 70 nations that developed the initial draft of the SDGs. The

SDSN included not only academics but also former policy makers, business leaders, and select civil society leaders. However, as a research and technical network, the largest number of network chairs and members was researchers. A challenge has been the much greater potential range of activities that networks could engage in following the ratification of the SDGs, vs. pre-2015. The unifying purpose of the development of the SDGs became more diffuse, with each network following its own path during the period of implementation.

Regional MSPs

The SDGs imply a cross-national learning agenda, in which communities of nations learn from one another regarding the successes, challenges, and solutions that all experience while implementing the Sustainable Development Goals. However, it may be impractical to expect that all UN member nations will have equal access to the knowledge and be open to input from any other country in the world. Countries are more likely to turn to those that they view as partners, for political, cultural, geographic, or linguistic reasons. Regional institutions and sub-governance structures (e.g., Pan American Health Organization, the Economic Commission for Latin America and Caribbean-ECLAC, and the East African Community) are some examples of regional MSPs that have come to play this very important role by setting regional priorities, adapting standards, and providing peer reviews for member states (Every Woman Every Child 2017). Some financing structures, moreover, like the regional development banks, are also playing some roles, but their effectiveness may be limited due to their regional rather than global or national level focus.

The Education Quality and Learning for All (EQUAL) Network for SDG 4 is an example of a network of regional networks intended to encourage the development of within-region, across-country learning and coordination, networking, and multi-stakeholder partnerships. EQUAL is part of the Sustainable Development Solutions Network. It represents the post-2015 work of the SDSN's thematic network in the area of education and learning. EQUAL aims to facilitate development of regional networks of scholars working with NGOs and government to bring about progress in their own countries on SDG 4 targets and indicators (particularly the targets tied the most closely to child, youth, and young adult development – 4.1, 4.2, 4.4, and 4.7). EQUAL currently supports development of regional partnerships and networks in West Africa, Central, East, and Southern Africa; and the Middle East and North Africa. In each region, EQUAL has commissioned seed grant competitions to support measurement and intervention evaluation related to SDG 4. In order to receive the seed grant, each scholar is required to meet specified guidelines including identifying an NGO or government partner, as well as a more senior scholar in their region. EQUAL also organizes regional convenings to bring together scholars and mentors to share experiences, utilize local knowledge or resources, and mutually build the research skills required. Other focus areas of EQUAL include encouraging the development of collaboration of academicians with national policy and practice

partners; measurement at national levels but informed by rigorous developmental science; research skills at the interaction of culture, context, and human development; and impact evaluation and implementation research. Challenges of EQUAL include within-region diversity of language and research traditions, as well as cross-regional diversity. The strategy requires contextualization to these aspects of diversity, as well as the various research institution and university practices within which EQUAL aims to make a contribution.

National MSPs

There are too many national MSPs working on the SDG to be able to profile here. However, we can note several types of national MSPs that work on child and youth development. These have been profiled in other work on national governance, finance, and scale in programs and policies for children (e.g., examples of Cambodia, Laos, Kenya, and Uganda in Britto et al. 2014; other examples in Vargas-Barón 2015; Supplee and Metz 2015).

Partnerships involving national governments take on many forms. First, inter-ministry commissions are a common form of MSP that intentionally include representation from multiple social sectors (e.g., education, health, social protection, child protection) to coordinate the work of these sectors in supporting child and youth development. Typically, these MSPs recognize that child development is multi-domain in nature and therefore requires coordinated work across multiple sectors and associated ministries and agencies. They also frequently include multi-sectoral collaborations of representatives from academia, civil society, local communities, and the private sector. The "Crece Contigo" in Chile is one such example. It was formed after extensive consultations with national and international experts, CSOs, and community actors across sectors, multi-sectoral collaboration of nine government ministries, municipalities, and public services to address inequities and social determiners of health provision. Several other national MSPs have been formed – e.g., in Peru, Nigeria, Malawi, and India (Every Woman Every Child 2017).

Second, a lead ministry can also take on the role of coordinating government-wide work on child or youth development. Such a process may be more effective if the lead ministry has resources and convening power (e.g., in some cases, the Finance Ministry could take on such a role; Vargas-Barón 2015). However, it is more frequent that a service-oriented line ministry such as health or education, or one specifically devoted to children, may lead coordinated work on SDG 4.

Third, as the SDGs are an indicator and a measurement-driven process, a national statistics ministry may play the primary role. Such ministries would coordinate data from ministries of education for SDG 4 indicators, for example, or the ministry of health for nutrition and health-related indicators from SDG 2 or 3. When statistics ministries play the primary role, however, this may be at the risk of leaving other content-focused policies insufficiently linked to the SDG process.

Fourth, effective MSPs of any of these types should take into account variation at subnational and local levels. The integration of governance at subnational and local levels, for example, is critical if policy implementation is to take into account political, cultural, and geographic diversity within countries (Britto et al. 2014). The SDGs' equity agenda explicitly calls for attention to both rural and urban development; the needs of indigenous, rural, and remote populations; and the need to address gender equity and inequality within countries.

Challenges and Solutions in MSP Functioning at the Global, Regional, and National Levels

Global

Advantages of global MSPs are clear – they meet the global mandate of progress for the planet that the SDG agenda so ambitiously set forth. However, they also may suffer from difficulty in taking into account national variation in goals and norms regarding child and youth development. While language development is universal, for example, it takes different forms based on orthographic and representational forms across countries and within countries. One principle that we draw from participatory models is that participation of members – whether regional, national, or local – is key to success of all MSPs (Novy and Leubolt 2005).

As with each area of the Sustainable Development Goals, where transnational multi-stakeholder partnerships (MSPs) are utilized as a viable governance option, limited studies have been undertaken to systematically determine the rationale for their establishment (Andonova and Levy 2003; Pattberg and Widerberg 2016). The more successful global initiatives have been participatory. In this respect, the process of SDG development obtained much more active country-level involvement than that for MDG development. Progress on the SDGs will be attained only if coordination of efforts, critical engagements of all stakeholders, long-term investments in research and development, accountability, and internally generated self-control mechanisms among these multiple stakeholders are put in place (Andonova and Levy 2003; Pattberg and Widerberg 2016).

Regional

Regional networks, similarly, may simply span too large a scope of diversity to be able to act in a strong coordinated fashion to drive progress on the SDGs. Successful examples we have discussed have been linked by common historical or language dimensions (e.g., the Andean countries of Latin America or the East African Anglophone nations). Moreover, global finance mechanisms related to the

SDGs – in the areas of health or education, for example – tend to focus either at the global or national levels and do not often support entire regions at once. However, regional networks as noted above may be an effective more tractable alternative to expecting solely global processes to produce national-level progress.

National

At the national level, coordinated work in MSPs runs into challenges of clashes between investment priorities, subnational and local political party differences, and specific cultural, geographic, religious, or other conflicts in measurement of child development or program and policy conceptualization. For example, some coalitions within country may be for measuring child learning in early childhood or in grades 2 or 3, while others may find that inappropriate. Religious or ethnic groups may disagree on government responsibility vs. private responsibility for education or health care for children. Political parties may disagree on the prominence of investment in children within larger policy agendas. Within these interests, the role of research evidence is minor (Tseng 2012). Yet with attention to diversity of perspectives, the inter-sectoral commission, independent research committee, or other mechanisms discussed above may be effective in resolving such differences. Again a participatory approach appears critical (Novy and Leubolt 2005; Vargas-Baron 2005).

Developmental scientists may make a difference in addressing the challenges stated above. Ongoing mechanism for increased roles of research and generation of evidence to influence policy by developmental scientists can take several forms. For example, ministries or departments of planning could work with academic departments, research institutes, or statistics ministries to compile national data relevant to children and youth. National governments can thus potentially incorporate those data and evidence generated to inform policy change. Coordinating inter-sectoral commissions for children and youth can include academic researchers who specialize in the topic. In addition, researchers can help answer policy questions relevant to children and youth (a role that many national academies of science and social science play) when they generate special reports of relevance to policy issues.

Conclusion

This chapter discussed the potential roles of multiple stakeholders in achieving progress on SDG targets and indicators relevant to child and youth development. We also focused on conceptual as well as implementation challenges of the SDGs most relevant to children and youth. As SDG 16 and 17 indicate, the realization of each SDG requires both global multi-stakeholder partnerships, strong national institutions, and advances in governance dynamics for national governments that benefit

both the people and the planet. Effective implementation of the SDG agenda requires intra- and intergovernment cooperation, interdependence among countries, and increased levels of accountability and moral responsibility to integrate global commitments into national development plans and associated expenditure and implementation. For national governments, especially those from the low- and middle- income countries, achievements of SDG goals would require effective integration of actionable policies based on national and global contexts. In addition, it would require use of regional and global benchmarks to compare their own achievements against the SDG4 targets. These expectancies necessitate participatory and learning action, complementary and multiple stakeholder partnerships, and a wide range of skills, complex inter-sectoral coordination, varied measurement approaches, and heavy human and financial investments. Only through such partnerships can developmental science hope to play a role in ensuring that the next generation will be empowered, responsible, and nurturing custodians of our planet.

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Appendix: Global Indicator Framework for the Sustainable Development Goals and Targets of the 2030 Agenda for Sustainable Development

Sustainable Development Goal indicators should be disaggregated, where relevant, by income, sex, age, race, ethnicity, migratory status, disability and geographic location or other characteristics, in accordance with the Fundamental Principles of Official Statistics.[1]

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
Goal 1. End poverty in all its forms everywhere		
1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day	1.1.1 Proportion of population below the international poverty line, by sex, age, employment status and geographic location (urban/rural)	C010101
1.2 By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	1.2.1 Proportion of population living below the national poverty line, by sex and age	C010201
	1.2.2 Proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	C010202
1.3 Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable	1.3.1 Proportion of population covered by social protection floors/systems, by sex, distinguishing children, unemployed persons, older persons, persons with disabilities, pregnant women, newborns, work injury victims and the poor and the vulnerable	C010301

(continued)

[a] As contained in the **Annex** of the resolution adopted by the General Assembly on 6 July 2017, **Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development (A/RES/71/313)**

[1] Resolution 68/261

S. Verma, A. C. Petersen (eds.), *Developmental Science and Sustainable Development Goals for Children and Youth*, Social Indicators Research Series 74, https://doi.org/10.1007/978-3-319-96592-5

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance	1.4.1 Proportion of population living in households with access to basic services	C010401
	1.4.2 Proportion of total adult population with secure tenure rights to land, with legally recognized documentation and who perceive their rights to land as secure, by sex and by type of tenure	C010402
1.5 By 2030, build the resilience of the poor and those in vulnerable situations, and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters	1.5.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population	C200303
	1.5.2 Direct economic loss attributed to disasters in relation to global gross domestic product (GDP)	C010502
	1.5.3 Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030	C200304
	1.5.4 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies	C200305
1.a Ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programmes and policies to end poverty in all its dimensions	1.a.1 Proportion of domestically generated resources allocated by the government directly to poverty reduction programmes	C010a01
	1.a.2 Proportion of total government spending on essential services (education, health and social protection)	C010a02
	1.a.3 Sum of total grants and non-debt-creating inflows directly allocated to poverty reduction programmes as a proportion of GDP	C010a03
1.b Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender-sensitive development strategies, to support accelerated investment in poverty eradication actions	1.b.1 Proportion of government recurrent and capital spending to sectors that disproportionately benefit women, the poor and vulnerable groups	C010b01

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture		
2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round	2.1.1 Prevalence of undernourishment	C020101
	2.1.2 Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)	C020102
2.2 By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons	2.2.1 Prevalence of stunting (height for age <-2 standard deviation from the median of the World Health Organization (WHO) Child Growth Standards) among children under 5 years of age	C020201
	2.2.2 Prevalence of malnutrition (weight for height >+2 or <-2 standard deviation from the median of the WHO Child Growth Standards) among children under 5 years of age, by type (wasting and overweight)	C020202
2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and nonfarm employment	2.3.1 Volume of production per labour unit by classes of farming/pastoral/forestry enterprise size	C020301
	2.3.2 Average income of small-scale food producers, by sex and indigenous status	C020302
2.4 By 2030, ensure sustainable food production systems, and implement resilient agricultural practices that increase productivity and production; that help maintain ecosystems; that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters; and that progressively improve land and soil quality	2.4.1 Proportion of agricultural area under productive and sustainable agriculture	C020401

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
2.5 By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed	2.5.1 Number of plant and animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities	C020501
	2.5.2 Proportion of local breeds classified as being at risk, not at risk or at unknown level of risk of extinction	C020502
2.a Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries	2.a.1 The agriculture orientation index for government expenditures	C020a01
	2.a.2 Total official flows (official development assistance plus other official flows) to the agriculture sector	C020a02
2.b Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round	2.b.1 Agricultural export subsidies	C020b02
2.c Adopt measures to ensure the proper functioning of food commodity markets and their derivatives, and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility	2.c.1 Indicator of food price anomalies	C020c01
Goal 3. Ensure healthy lives and promote well-being for all at all ages		
3.1 By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births	3.1.1 Maternal mortality ratio	C030101
	3.1.2 Proportion of births attended by skilled health personnel	C030102

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
3.2 By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births	3.2.1 Under-5 mortality rate	C030201
	3.2.2 Neonatal mortality rate	C030202
3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases, and combat hepatitis, water-borne diseases and other communicable diseases	3.3.1 Number of new HIV infections per 1,000 uninfected population, by sex, age and key populations	C030301
	3.3.2 Tuberculosis incidence per 100,000 population	C030302
	3.3.3 Malaria incidence per 1,000 population	C030303
	3.3.4 Hepatitis B incidence per 100,000 population	C030304
	3.3.5 Number of people requiring interventions against neglected tropical diseases	C030305
3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment, and promote mental health and well-being	3.4.1 Mortality rate attributed to cardiovascular disease, cancer, diabetes or chronic respiratory disease	C030401
	3.4.2 Suicide mortality rate	C030402
3.5 Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol	3.5.1 Coverage of treatment interventions (pharmacological, psychosocial and rehabilitation and aftercare services) for substance use disorders	C030501
	3.5.2 Harmful use of alcohol, defined according to the national context as alcohol per capita consumption (aged 15 years and older) within a calendar year in litres of pure alcohol	C030502
3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents	3.6.1 Death rate due to road traffic injuries	C030601
3.7 By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes	3.7.1 Proportion of women of reproductive age (aged 15–49 years) who have their need for family planning satisfied with modern methods	C030701
	3.7.2 Adolescent birth rate (aged 10–14 years; aged 15–19 years) per 1,000 women in that age group	C030702

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all	3.8.1 Coverage of essential health services (defined as the average coverage of essential services based on tracer interventions that include reproductive, maternal, newborn and child health, infectious diseases, non-communicable diseases and service capacity and access, among the general and the most disadvantaged population)	C030801
	3.8.2 Proportion of population with large household expenditures on health as a share of total household expenditure or income	C030802
3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	3.9.1 Mortality rate attributed to household and ambient air pollution	C030901
	3.9.2 Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe water, sanitation and hygiene (WASH) for all services)	C030902
	3.9.3 Mortality rate attributed to unintentional poisoning	C030903
3.a Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate	3.a.1 Age-standardized prevalence of current tobacco use among persons aged 15 years and older	C030a01
3.b Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, and provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the fullest the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health and, in particular, provide access to medicines for all	3.b.1 Proportion of the target population covered by all vaccines included in their national programme	C030b01
	3.b.2 Total net official development assistance to medical research and basic health sectors	C030b02
	3.b.3 Proportion of health facilities that have a core set of relevant essential medicines available and affordable on a sustainable basis	C030b03
3.c Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States	3.c.1 Health worker density and distribution	C030c01

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
3.d Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks	3.d.1 International Health Regulations (IHR) capacity and health emergency preparedness	C030d01
Goal 4. Ensure inclusive and equitable quality education, and promote lifelong learning opportunities for all		
4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes	4.1.1 Proportion of children and young people (a) in grades 2/3, (b) at the end of primary and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex	C040101
4.2 By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education	4.2.1 Proportion of children under 5 years of age who are developmentally on track in health, learning and psychosocial well-being, by sex	C040201
	4.2.2 Participation rate in organized learning (1 year before the official primary entry age), by sex	C040202
4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university	4.3.1 Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by sex	C040301
4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship	4.4.1 Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill	C040401
4.5 By 2030, eliminate gender disparities in education, and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations	4.5.1 Parity indices (female/male, rural/urban, bottom/top wealth quintile and others such as disability status, indigenous peoples and conflict-affected, as data become available) for all education indicators on this list that can be disaggregated	C040501
4.6 By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy	4.6.1 Proportion of population in a given age group achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by sex	C040601

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development	4.7.1 Extent to which (i) global citizenship education and (ii) education for sustainable development, including gender equality and human rights, are mainstreamed at all levels in (a) national education policies, (b) curricula, (c) teacher education and (d) student assessment	C040701
4.a Build and upgrade education facilities that are child, disability and gender sensitive, and provide safe, non-violent, inclusive and effective learning environments for all	4.a.1 Proportion of schools with access to (a) electricity, (b) the Internet for pedagogical purposes, (c) computers for pedagogical purposes, (d) adapted infrastructure and materials for students with disabilities, (e) basic drinking water, (f) single-sex basic sanitation facilities and (g) basic handwashing facilities (as per the WASH indicator definitions)	C040a01
4.b By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, and technical, engineering and scientific programmes, in developed countries and other developing countries	4.b.1 Volume of official development assistance flows for scholarships by sector and type of study	C040b01
4.c By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States	4.c.1 Proportion of teachers in (a) pre-primary, (b) primary, (c) lower secondary and (d) upper secondary education who have received at least the minimum organized teacher training (e.g. pedagogical training) pre-service or in-service required for teaching at the relevant level in a given country	C040c01
Goal 5. Achieve gender equality and empower all women and girls		
5.1 End all forms of discrimination against all women and girls everywhere	5.1.1 Whether or not legal frameworks are in place to promote, enforce and monitor equality and non-discrimination on the basis of sex	C050101

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
5.2 Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation	5.2.1 Proportion of ever-partnered women and girls aged 15 years and older subjected to physical, sexual or psychological violence by a current or former intimate partner in the previous 12 months, by form of violence and by age	C050201
	5.2.2 Proportion of women and girls aged 15 years and older subjected to sexual violence by persons other than an intimate partner in the previous 12 months, by age and place of occurrence	C050202
5.3 Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation	5.3.1 Proportion of women aged 20–24 years who were married or in a union before age 15 and 18	C050301
	5.3.2 Proportion of girls and women aged 15–49 years who have undergone female genital mutilation/cutting, by age	C050302
5.4 Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate	5.4.1 Proportion of time spent on unpaid domestic and care work, by sex, age and location	C050401
5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life	5.5.1 Proportion of seats held by women in (a) national parliaments and (b) local governments	C050501
	5.5.2 Proportion of women in managerial positions	C050502
5.6 Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences	5.6.1 Proportion of women aged 15–49 years who make their own informed decisions regarding sexual relations, contraceptive use and reproductive health care	C050601
	5.6.2 Number of countries with laws and regulations that guarantee full and equal access to women and men aged 15 years and older to sexual and reproductive health care, information and education	C050602

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
5.a Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws	5.a.1 (a) Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex, and (b) share of women among owners or rights-bearers of agricultural land, by type of tenure	C050a01
	5.a.2 Proportion of countries where the legal framework (including customary law) guarantees women's equal rights to land ownership and/or control	C050a02
5.b Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women	5.b.1 Proportion of individuals who own a mobile telephone, by sex	C050b01
5.c Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels	5.c.1 Proportion of countries with systems to track and make public allocations for gender equality and women's empowerment	C050c01
Goal 6. Ensure availability and sustainable management of water and sanitation for all		
6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all	6.1.1 Proportion of population using safely managed drinking water services	C060101
6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all, and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations	6.2.1 Proportion of population using safely managed sanitation services, including a handwashing facility with soap and water	C060201
6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally	6.3.1 Proportion of wastewater safely treated	C060301
	6.3.2 Proportion of bodies of water with good ambient water quality	C060302
6.4 By 2030, substantially increase water use efficiency across all sectors, and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity	6.4.1 Change in water use efficiency over time	C060401
	6.4.2 Level of water stress: freshwater withdrawal as a proportion of available freshwater resources	C060402
6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate	6.5.1 Degree of integrated water resources management implementation (0–100)	C060501
	6.5.2 Proportion of transboundary basin area with an operational arrangement for water cooperation	C060502

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes	6.6.1 Change in the extent of water-related ecosystems over time	C060601
6.a By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies	6.a.1 Amount of water- and sanitation-related official development assistance that is part of a government-coordinated spending plan	C060a01
6.b Support and strengthen the participation of local communities in improving water and sanitation management	6.b.1 Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management	C060b01
Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all		
7.1 By 2030, ensure universal access to affordable, reliable and modern energy services	7.1.1 Proportion of population with access to electricity	C070101
	7.1.2 Proportion of population with primary reliance on clean fuels and technology	C070102
7.2 By 2030, increase substantially the share of renewable energy in the global energy mix	7.2.1 Renewable energy share in the total final energy consumption	C070201
7.3 By 2030, double the global rate of improvement in energy efficiency	7.3.1 Energy intensity measured in terms of primary energy and GDP	C070301
7.a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil fuel technology, and promote investment in energy infrastructure and clean energy technology	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems	C070a01
7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States and landlocked developing countries, in accordance with their respective programmes of support	7.b.1 Investments in energy efficiency as a proportion of GDP and the amount of foreign direct investment in financial transfer for infrastructure and technology to sustainable development services	C070b01

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all		
8.1 Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries	8.1.1 Annual growth rate of real GDP per capita	C080101
8.2 Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value-added and labour-intensive sectors	8.2.1 Annual growth rate of real GDP per employed person	C080201
8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services	8.3.1 Proportion of informal employment in non-agriculture employment, by sex	C080301
8.4 Improve progressively, through 2030, global resource efficiency in consumption and production, and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead	8.4.1 Material footprint, material footprint per capita and material footprint per GDP	C200202
	8.4.2 Domestic material consumption, domestic material consumption per capita and domestic material consumption per GDP	C200203
8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	8.5.1 Average hourly earnings of female and male employees, by occupation, age and persons with disabilities	C080501
	8.5.2 Unemployment rate, by sex, age and persons with disabilities	C080502
8.6 By 2020, substantially reduce the proportion of youth not in employment, education or training	8.6.1 Proportion of youth (aged 15–24 years) not in education, employment or training	C080601
8.7 Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms	8.7.1 Proportion and number of children aged 5–17 years engaged in child labour, by sex and age	C080701

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
8.8 Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment	8.8.1 Frequency rates of fatal and non-fatal occupational injuries, by sex and migrant status	C080801
	8.8.2 Level of national compliance with labour rights (freedom of association and collective bargaining) based on International Labour Organization (ILO) textual sources and national legislation, by sex and migrant status	C080802
8.9 By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products	8.9.1 Tourism direct GDP as a proportion of total GDP and in growth rate	C080901
	8.9.2 Proportion of jobs in sustainable tourism industries out of total tourism jobs	C080902
8.10 Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all	8.10.1 (a) Number of commercial bank branches per 100,000 adults and (b) number of automated teller machines (ATMs) per 100,000 adults	C081001
	8.10.2 Proportion of adults (15 years and older) with an account at a bank or other financial institution or with a mobile money service provider	C081002
8.a Increase Aid for Trade support for developing countries, in particular least developed countries, including through the Enhanced Integrated Framework for Trade-Related Technical Assistance to Least Developed Countries	8.a.1 Aid for Trade commitments and disbursements	C080a01
8.b By 2020, develop and operationalize a global strategy for youth employment, and implement the Global Jobs Pact of the International Labour Organization	8.b.1 Existence of a developed and operationalized national strategy for youth employment, as a distinct strategy or as part of a national employment strategy	C080b01
Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation		
9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all	9.1.1 Proportion of the rural population who live within 2 km of an all-season road	C090101
	9.1.2 Passenger and freight volumes, by mode of transport	C090102

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
9.2 Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries	9.2.1 Manufacturing value added as a proportion of GDP and per capita	C090201
	9.2.2 Manufacturing employment as a proportion of total employment	C090202
9.3 Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets	9.3.1 Proportion of small-scale industries in total industry value added	C090301
	9.3.2 Proportion of small-scale industries with a loan or line of credit	C090302
9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities	9.4.1 CO_2 emission per unit of value added	C090401
9.5 Enhance scientific research, and upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending	9.5.1 Research and development expenditure as a proportion of GDP	C090501
	9.5.2 Researchers (in full-time equivalent) per million inhabitants	C090502
9.a Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States	9.a.1 Total official international support (official development assistance plus other official flows) to infrastructure	C090a01
9.b Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities	9.b.1 Proportion of medium- and high-tech industry value added in total value added	C090b01

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
9.c Significantly increase access to information and communications technology, and strive to provide universal and affordable access to the Internet in least developed countries by 2020	9.c.1 Proportion of population covered by a mobile network, by technology	C090c01
Goal 10. Reduce inequality within and among countries		
10.1 By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average	10.1.1 Growth rates of household expenditure or income per capita among the bottom 40 per cent of the population and the total population	C100101
10.2 By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion, economic or other status	10.2.1 Proportion of people living below 50 per cent of median income, by sex, age and persons with disabilities	C100201
10.3 Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard	10.3.1 Proportion of population reporting having personally felt discriminated against or harassed in the previous 12 months on the basis of a ground of discrimination prohibited under international human rights law	C200204
10.4 Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality	10.4.1 Labour share of GDP, comprising wages and social protection transfers	C100401
10.5 Improve the regulation and monitoring of global financial markets and institutions, and strengthen the implementation of such regulations	10.5.1 Financial Soundness Indicators	C100501
10.6 Ensure enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions in order to deliver more effective, credible, accountable and legitimate institutions	10.6.1 Proportion of members and voting rights of developing countries in international organizations	C200205
10.7 Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies	10.7.1 Recruitment cost borne by employee as a proportion of yearly income earned in country of destination	C100701
	10.7.2 Number of countries that have implemented well-managed migration policies	C100702

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
10.a Implement the principle of special and differential treatment for developing countries, in particular least developed countries, in accordance with World Trade Organization agreements	10.a.1 Proportion of tariff lines applied to imports from least developed countries and developing countries with zero-tariff	C100a01
10.b Encourage official development assistance and financial flows, including foreign direct investment, to States where the need is greatest, in particular least developed countries, African countries, small island developing States and landlocked developing countries, in accordance with their national plans and programmes	10.b.1 Total resource flows for development, by recipient and donor countries and type of flow (e.g. official development assistance, foreign direct investment and other flows)	C100b01
10.c By 2030, reduce to less than 3 per cent the transaction costs of migrant remittances, and eliminate remittance corridors with costs higher than 5 per cent	10.c.1 Remittance costs as a proportion of the amount remitted	C100c01
Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable		
11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services, and upgrade slums	11.1.1 Proportion of urban population living in slums, informal settlements or inadequate housing	C110101
11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons	11.2.1 Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities	C110201
11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries	11.3.1 Ratio of land consumption rate to population growth rate	C110301
	11.3.2 Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratically	C110302

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage	11.4.1 Total expenditure (public and private) per capita spent on the preservation, protection and conservation of all cultural and natural heritage, by type of heritage (cultural, natural, mixed and World Heritage Centre designation), level of government (national, regional and local/municipal), type of expenditure (operating expenditure/ investment) and type of private funding (donations in kind, private non-profit sector and sponsorship)	C110401
11.5 By 2030, significantly reduce the number of deaths and the number of people affected, and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations	11.5.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population	C200303
	11.5.2 Direct economic loss in relation to global GDP, damage to critical infrastructure and number of disruptions to basic services, attributed to disasters	C110502
11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management	11.6.1 Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities	C110601
	11.6.2 Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)	C110602
11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities	11.7.1 Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities	C110701
	11.7.2 Proportion of persons victim of physical or sexual harassment, by sex, age, disability status and place of occurrence, in the previous 12 months	C110702
11.a Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning	11.a.1 Proportion of population living in cities that implement urban and regional development plans integrating population projections and resource needs, by size of city	C110a01

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change and resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels	11.b.1 Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030	C200304
	11.b.2 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies	C200305
11.c Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials	11.c.1 Proportion of financial support to the least developed countries that is allocated to the construction and retrofitting of sustainable, resilient and resource-efficient buildings utilizing local materials	C110c01
Goal 12. Ensure sustainable consumption and production patterns		
12.1 Implement the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries	12.1.1 Number of countries with sustainable consumption and production (SCP) national action plans or SCP mainstreamed as a priority or a target into national policies	C120101
12.2 By 2030, achieve the sustainable management and efficient use of natural resources	12.2.1 Material footprint, material footprint per capita and material footprint per GDP	C200202
	12.2.2 Domestic material consumption, domestic material consumption per capita and domestic material consumption per GDP	C200203
12.3 By 2030, halve per capita global food waste at the retail and consumer levels, and reduce food losses along production and supply chains, including postharvest losses	12.3.1 Global food loss index	C120301
12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment	12.4.1 Number of parties to international multilateral environmental agreements on hazardous waste and other chemicals that meet their commitments and obligations in transmitting information as required by each relevant agreement	C120401
	12.4.2 Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment	C120402

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse	12.5.1 National recycling rate, tons of material recycled	C120501
12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle	12.6.1 Number of companies publishing sustainability reports	C120601
12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities	12.7.1 Number of countries implementing sustainable public procurement policies and action plans	C120701
12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature	12.8.1 Extent to which (i) global citizenship education and (ii) education for sustainable development (including climate change education) are mainstreamed in (a) national education policies, (b) curricula, (c) teacher education and (d) student assessment	C120801
12.a Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production	12.a.1 Amount of support to developing countries on research and development for sustainable consumption and production, and environmentally sound technologies	C120a01
12.b Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products	12.b.1 Number of sustainable tourism strategies or policies and implemented action plans with agreed monitoring and evaluation tools	C120b01
12.c Rationalize inefficient fossil fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities	12.c.1 Amount of fossil fuel subsidies per unit of GDP (production and consumption) and as a proportion of total national expenditure on fossil fuels	C120c01

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
Goal 13. Take urgent action to combat climate change and its impacts[b]		
13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries	13.1.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population	C200303
	13.1.2 Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030	C200304
	13.1.3 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies	C200305
13.2 Integrate climate change measures into national policies, strategies and planning	13.2.1 Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or others)	C130201
13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula	C130301
	13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer and development actions	C130302
13.a Implement the commitment undertaken by developed country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible	13.a.1 Mobilized amount of US dollars per year between 2020 and 2025 accountable towards the $100 billion commitment	C130a01

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
13.b Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities	13.b.1 Number of least developed countries and small island developing States that are receiving specialized support, and amount of support including finance, technology and capacity-building, for mechanisms for raising capacities for effective climate change-related planning and management, including focusing on women, youth and local and marginalized communities	C130b01
Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development		
14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution	14.1.1 Index of coastal eutrophication and floating plastic debris density	C140101
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans	14.2.1 Proportion of national exclusive economic zones managed using ecosystem-based approaches	C140201
14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels	14.3.1 Average marine acidity (pH) measured at agreed suite of representative sampling stations	C140301
14.4 By 2020, effectively regulate harvesting and end overfishing; illegal, unreported and unregulated fishing; and destructive fishing practices, and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics	14.4.1 Proportion of fish stocks within biologically sustainable levels	C140401
14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information	14.5.1 Coverage of protected areas in relation to marine areas	C140501

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing; eliminate subsidies that contribute to illegal, unreported and unregulated fishing; and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation[c]	14.6.1 Progress by countries in the degree of implementation of international instruments aiming to combat illegal, unreported and unregulated fishing	C140601
14.7 By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism	14.7.1 Sustainable fisheries as a proportion of GDP in small island developing States, least developed countries and all countries	C140701
14.a Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries	14.a.1 Proportion of total research budget allocated to research in the field of marine technology	C140a01
14.b Provide access for small-scale artisanal fishers to marine resources and markets	14.b.1 Progress by countries in the degree of application of a legal/regulatory/policy/institutional framework which recognizes and protects access rights for small-scale fisheries	C140b01

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
14.c Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in the United Nations Convention on the Law of the Sea, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of "The future we want"	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nations Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources	C140c01
Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss		
15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	15.1.1 Forest area as a proportion of total land area	C150101
	15.1.2 Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type	C150102
15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally	15.2.1 Progress towards sustainable forest management	C150201
15.3 By 2030, combat desertification; restore degraded land and soil, including land affected by desertification, drought and floods; and strive to achieve a land degradation-neutral world	15.3.1 Proportion of land that is degraded over total land area	C150301
15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development	15.4.1 Coverage by protected areas of important sites for mountain biodiversity	C150401
	15.4.2 Mountain Green Cover Index	C150402
15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	15.5.1 Red List Index	C150501

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
15.6 Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources, and promote appropriate access to such resources, as internationally agreed	15.6.1 Number of countries that have adopted legislative, administrative and policy frameworks to ensure fair and equitable sharing of benefits	C150601
15.7 Take urgent action to end poaching and trafficking of protected species of flora and fauna, and address both demand and supply of illegal wildlife products	15.7.1 Proportion of traded wildlife that was poached or illicitly trafficked	C200206
15.8 By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species	15.8.1 Proportion of countries adopting relevant national legislation and adequately resourcing the prevention or control of invasive alien species	C150801
15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts	15.9.1 Progress towards national targets established in accordance with Aichi Biodiversity Target 2 of the Strategic Plan for Biodiversity 2011–2020	C150901
15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems	15.a.1 Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems	C200207
15.b Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation	15.b.1 Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems	C200207
15.c Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities	15.c.1 Proportion of traded wildlife that was poached or illicitly trafficked	C200206

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels		
16.1 Significantly reduce all forms of violence and related death rates everywhere	16.1.1 Number of victims of intentional homicide per 100,000 population, by sex and age	C160101
	16.1.2 Conflict-related deaths per 100,000 population, by sex, age and cause	C160102
	16.1.3 Proportion of population subjected to physical, psychological or sexual violence in the previous 12 months	C160103
	16.1.4 Proportion of population that feel safe walking alone around the area they live	C160104
16.2 End abuse, exploitation, trafficking and all forms of violence against and torture of children	16.2.1 Proportion of children aged 1–17 years who experienced any physical punishment and/or psychological aggression by caregivers in the past month	C160201
	16.2.2 Number of victims of human trafficking per 100,000 population, by sex, age and form of exploitation	C160202
	16.2.3 Proportion of young women and men aged 18–29 years who experienced sexual violence by age 18	C160203
16.3 Promote the rule of law at the national and international levels, and ensure equal access to justice for all	16.3.1 Proportion of victims of violence in the previous 12 months who reported their victimization to competent authorities or other officially recognized conflict resolution mechanisms	C160301
	16.3.2 Unsentenced detainees as a proportion of overall prison population	C160302
16.4 By 2030, significantly reduce illicit financial and arms flows, strengthen the recovery and return of stolen assets and combat all forms of organized crime	16.4.1 Total value of inward and outward illicit financial flows (in current US dollars)	C160401
	16.4.2 Proportion of seized, found or surrendered arms whose illicit origin or context has been traced or established by a competent authority in line with international instruments	C160402
16.5 Substantially reduce corruption and bribery in all their forms	16.5.1 Proportion of persons who had at least one contact with a public official and who paid a bribe to a public official or were asked for a bribe by those public officials, during the previous 12 months	C160501
	16.5.2 Proportion of businesses that had at least one contact with a public official and that paid a bribe to a public official or were asked for a bribe by those public officials during the previous 12 months	C160502

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
16.6 Develop effective, accountable and transparent institutions at all levels	16.6.1 Primary government expenditures as a proportion of original approved budget, by sector (or by budget codes or similar)	C160601
	16.6.2 Proportion of population satisfied with their last experience of public services	C160602
16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels	16.7.1 Proportions of positions (by sex, age, persons with disabilities and population groups) in public institutions (national and local legislatures, public service and judiciary) compared to national distributions	C160701
	16.7.2 Proportion of population who believe decision-making is inclusive and responsive, by sex, age, disability and population group	C160702
16.8 Broaden and strengthen the participation of developing countries in the institutions of global governance	16.8.1 Proportion of members and voting rights of developing countries in international organizations	C200205
16.9 By 2030, provide legal identity for all, including birth registration	16.9.1 Proportion of children under 5 years of age whose births have been registered with a civil authority, by age	C160901
16.10 Ensure public access to information, and protect fundamental freedoms, in accordance with national legislation and international agreements	16.10.1 Number of verified cases of killing, kidnapping, enforced disappearance, arbitrary detention and torture of journalists, associated media personnel, trade unionists and human rights advocates in the previous 12 months	C161001
	16.10.2 Number of countries that adopt and implement constitutional, statutory and/or policy guarantees for public access to information	C161002
16.a Strengthen relevant national institutions, including through international cooperation, for building capacity at all levels, in particular in developing countries, to prevent violence and combat terrorism and crime	16.a.1 Existence of independent national human rights institutions in compliance with the Paris Principles	C160a01
16.b Promote and enforce non-discriminatory laws and policies for sustainable development	16.b.1 Proportion of population reporting having personally felt discriminated against or harassed in the previous 12 months on the basis of a ground of discrimination prohibited under international human rights law	C200204

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development		
Finance		
17.1 Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection	17.1.1 Total government revenue as a proportion of GDP, by source	C170101
	17.1.2 Proportion of domestic budget funded by domestic taxes	C170102
17.2 Developed countries to implement fully their official development assistance commitments, including the commitment by many developed countries to achieve the target of 0.7 per cent of gross national income for official development assistance (ODA/GNI) to developing countries and 0.15 – 0.20 per cent of ODA/GNI to least developed countries; ODA providers are encouraged to consider setting a target to provide at least 0.20 per cent of ODA/GNI to least developed countries	17.2.1 Net official development assistance, total and to least developed countries, as a proportion of the Organization for Economic Cooperation and Development's (OECD) Development Assistance Committee donors' gross national income (GNI)	C170201
17.3 Mobilize additional financial resources for developing countries from multiple sources	17.3.1 Foreign direct investment (FDI), official development assistance and South-South cooperation as a proportion of total domestic budget	C170301
	17.3.2 Volume of remittances (in US dollars) as a proportion of total GDP	C170302
17.4 Assist developing countries in attaining long-term debt sustainability through coordinated policies aimed at fostering debt financing, debt relief and debt restructuring, as appropriate, and address the external debt of highly indebted poor countries to reduce debt distress	17.4.1 Debt service as a proportion of exports of goods and services	C170401
17.5 Adopt and implement investment promotion regimes for least developed countries	17.5.1 Number of countries that adopt and implement investment promotion regimes for least developed countries	C170501

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
Technology		
17.6 Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation, and enhance knowledge-sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism	17.6.1 Number of science and/or technology cooperation agreements and programmes between countries, by type of cooperation	C170601
	17.6.2 Fixed Internet broadband subscriptions per 100 inhabitants, by speed	C170602
17.7 Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed	17.7.1 Total amount of approved funding for developing countries to promote the development, transfer, dissemination and diffusion of environmentally sound technologies	C170701
17.8 Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology	17.8.1 Proportion of individuals using the Internet	C170801
Capacity-building		
17.9 Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the Sustainable Development Goals, including through North-South, South-South and triangular cooperation	17.9.1 Dollar value of financial and technical assistance (including through North-South, South-South and triangular cooperation) committed to developing countries	C170901
Trade		
17.10 Promote a universal, rule-based, open, non-discriminatory and equitable multilateral trading system under the World Trade Organization, including through the conclusion of negotiations under its Doha Development Agenda	17.10.1 Worldwide weighted tariff-average	C171001

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
17.11 Significantly increase the exports of developing countries, in particular with a view to doubling the least developed countries' share of global exports by 2020	17.11.1 Developing countries' and least developed countries' share of global exports	C171101
17.12 Realize timely implementation of duty-free and quota-free market access on a lasting basis for all least developed countries, consistent with World Trade Organization decisions, including by ensuring that preferential rules of origin applicable to imports from least developed countries are transparent and simple, and contribute to facilitating market access	17.12.1 Average tariffs faced by developing countries, least developed countries and small island developing States	C171201
Systemic issues		
Policy and institutional coherence		
17.13 Enhance global macroeconomic stability, including through policy coordination and policy coherence	17.13.1 Macroeconomic Dashboard	C171301
17.14 Enhance policy coherence for sustainable development	17.14.1 Number of countries with mechanisms in place to enhance policy coherence of sustainable development	C171401
17.15 Respect each country's policy space and leadership to establish and implement policies for poverty eradication and sustainable development	17.15.1 Extent of use of country-owned results frameworks and planning tools by providers of development cooperation	C171501
Multi-stakeholder partnerships		
17.16 Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the Sustainable Development Goals in all countries, in particular developing countries	17.16.1 Number of countries reporting progress in multi-stakeholder development effectiveness monitoring frameworks that support the achievement of the sustainable development goals	C171601
17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships	17.17.1 Amount of US dollars committed to public-private and civil society partnerships	C171701
Data, monitoring and accountability		

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator codes[a]
17.18 By 2020, enhance capacity-building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts	17.18.1 Proportion of sustainable development indicators produced at the national level with full disaggregation when relevant to the target, in accordance with the Fundamental Principles of Official Statistics	C171801
	17.18.2 Number of countries that have national statistical legislation that complies with the Fundamental Principles of Official Statistics	C171802
	17.18.3 Number of countries with a national statistical plan that is fully funded and under implementation, by source of funding	C171803
17.19 By 2030, build on existing initiatives to develop measurements of progress on sustainable development that complement gross domestic product, and support statistical capacity-building in developing countries	17.19.1 Dollar value of all resources made available to strengthen statistical capacity in developing countries	C171901
	17.19.2 Proportion of countries that (a) have conducted at least one population and housing census in the last 10 years and (b) have achieved 100 per cent birth registration and 80 per cent death registration	C171902

[a]Indicator codes were developed by UNSD for data transfer, tracking and other statistical purposes
[b]Acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change
[c]Taking into account ongoing World Trade Organization negotiations, the Doha Development Agenda and the Hong Kong ministerial mandate