



# Developing an Indicator System to Measure Child Well-Being: Lessons Learned over Time

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## Abstract

Tracking the well-being of children is as important to a country as monitoring the economy. In fact, some day, today's children will be in charge, and it is critical to know how children in varied groups and communities are developing. Fortunately, enormous progress in measuring and monitoring children's well-being has been made in recent decades in the United States (U.S) at the national level and, to a lesser extent, at the state level. However, efforts to describe children's well-being at the community level have been uneven and varied. Also, research is needed to assess the appropriateness of available measures in diverse population subgroups. Robust yet brief measures of children's social and emotional outcomes are needed; and brief measures of the contextual factors that influence children's outcomes continue to be in short supply. The purpose of this paper is to describe the experience of one country over four decades, as the lessons learned may be informative to others.

**Keywords** Indicators · Whole child perspective · Child well-being measurement · History of child indicators in the United States · Monitoring trends in children's development

## 1 Introduction

### 1.1 A Brief History of the US Indicators Field

Indicator work focusing on children has been moving forward in the US for more than 40 years. While it is not possible to describe every indicators initiative during this time, a selective history for the US is provided to illustrate the progress that has been made and the ongoing challenges. Although the US has not signed the UN Convention on the Rights of the Child, many of the same constructs emphasized in the Convention have been included among US indicators (Doek 2014). The goal here, though, is not to

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debate the definition of child well-being but to provide a history of how the child indicators field developed in the US, so that other countries or communities might move more quickly and efficiently through the process.

Four decades ago, available data in the US addressed primarily family, economic, and demographic factors; and most indicators focused on background or contextual factors. The measures of the *well-being* of children depicted various problems, such as crime and teen births among school-age children; and much of the data came from administrative sources, such as vital statistics (U.S. House of Representative 1979). Little information was available on positive or subjective outcomes, such as the child's report of their engagement in education. The available data were mostly at the national level. Fortunately, over time, considerable progress has been made, though that progress has been slow and work is incomplete. However, in the last decade or two, there has been growing interest in developing and using a wide range of positive as well as negative indicators – especially at the community level – to assess the contexts in which children develop in addition to their social, cognitive, health, and emotional well-being (U.S. Department of Health, Education, and Welfare 1977; Child Trends 1984; Moore 2014).

In one early effort, in the late 1970s and early 1980s, Child Trends prepared several reports for the House of Representatives' Select Committee on Children and Families (U.S. House of Representative 1979; U.S. House of Representative 1983). The reports drew on available information to describe the child population, childbearing, income, education, and health, and the programs and services available to children. The reports included mostly background information and data on problems, such as suicide, drug use, unwanted births, and mortality. Life goals and college aspirations were the only two positive indicators, and few items described the subjective perceptions of children. This reflects the information that was available at that time. A similar report, "Youth Indicators", published by the U.S. Department of Education in 1977, focused on academic topics but also had very few positive or subjective measures. The lack of positive and subjective indicators was a characteristic of other reports from the era, such as the Statistical Abstract and the "Green Book" from the Ways and Means Committee (U.S. House of Representative 1994; U.S. Department of Commerce 1980; U.S. Department of Education, Office of Educational Research and Improvement 1977).

Some of the data in these reports came from school-based surveys initiated by federal agencies to inform program development. For example, Monitoring the Future was inaugurated in 1975 at the University of Michigan with funding from the Substance Abuse and Mental Health Services Administration. Initially, therefore, the primary focus was on substance use patterns and problem behaviors. It started with 12th grade students but now includes 8th and 10th graders.

The Youth Risk Behavior and Surveillance System is a similar school-based survey, but with a focus on health, initiated by the CDC in the early 1990s. Like Monitoring the Future, it is a survey that focuses on older youth, includes only students, and covers primarily problem behaviors ranging from violence to bullying to diet and sexual behavior.

A pathbreaking survey designed by Burt Brim and Nick Zill, conducted by Child Trends and funded by the Foundation for Child Development, was conducted in 1979. The National Survey of Children interviewed parents, children, and teachers. A nationally-representative sample of children, ages 7 to 11, were interviewed with a

protocol especially developed for young school-age children. The children were also administered the Peabody Picture Vocabulary Test. In addition, the survey included both positive and negative indicators. While the children in this survey were followed into early adulthood, the survey itself was only done once, so the data collected were not useful for trend analyses. Also, the sample did not include children aged 6 or younger. Nevertheless, it demonstrated the feasibility of assessing subjective constructs among children, measuring child well-being from multiple reporters, including children themselves, and doing direct assessments with children in their homes (Zill et al. 1983).

Another longitudinal survey that has followed children into adulthood is the National Longitudinal Survey of Youth, 1979, Child Supplement. The offspring of women in the survey were assessed and interviewed as they became older. Again, this survey has supported numerous research studies, but it has not been repeated and cannot provide indicator data. However, such longitudinal data can provide information on prospective validity that addresses whether a measure at one point in time predicts well-being at a later time (Moore et al. 2008).

Reflecting the ongoing need for richer and more comprehensive data, the National Commission on Children conducted a survey of parents and children aged 10–17 in 1990. Both parents and adolescents were surveyed to assess worries and fears, parent-child relationships, family time, parent engagement in children's school and activities, and the availability of activities, clubs, and sports for adolescents. This survey, however, did not supply information at the state or community level and was also a one-time survey that could not be included in federal indicators reports.

By 1996, when the US Department of Health and Human Services published "Trends in the Well-Being of America's Children and Youth", more data were gradually becoming available (Child Trends and Hernandez 1998). This report drew on recommendations from a major national conference organized by Child Trends and funded by the National Science Foundation in 1994 (Hauser et al. 1997). The report included many new measures, such as pre-school enrollment and parental reading to children. In the words of then Secretary Donna Shalala, "The data available for tracking the well-being of children and youth at the national level are fairly extensive. Even so, there remain major gaps in the statistical system that must be filled if we are to have a complete picture of the quality of our children's lives." (U.S. Department of Health and Human Services, pg. 10, 1998) Only data available at the national level were presented.

Meanwhile, with Executive Order 13045 by President Bill Clinton, the DHHS indicators effort became an official and ongoing government-wide initiative (Exec. Order No. 13045 1997). The newly established Federal Interagency Forum on Child and Family Statistics published its first annual report in 1997 – "America's Children: Key National Indicators of Well-Being" (Child Trends 1997) It included 30 selected indicators in four domains: economic security, health, education, and behavior and social environment. In addition, each section identified needed indicators, such as homelessness, long-term poverty, mental health, child abuse and neglect, and juvenile crime. Reflecting the paucity of data on young children, it also called for a measure of the "intellectual, social, and emotional skills of preschoolers over time".

At the turn of the century, as the supply of data began to expand, interest developed in having a single, summary indicator of child well-being that aggregated data across varied dimensions. A prominent example is the index of child well-being sponsored by the Foundation for Child Development (Land 2005). This was an important investment

in a good idea that was undermined by critical gaps in data. For example, the domain of Emotional/Spiritual Well-Being was comprised of three measures: the suicide rate for ages 10–19, religious attendance, and the importance of religion. Also, the domains were downsized from a conceptualization developed for adults, not a conceptual model appropriate for children. The Index met with a mixed response, presumably because it was developed before its time.

## 1.2 Influences on the US Indicators Field

Research and theory on child and youth development have informed the development of indicators over the years. In particular, Urie Bronfenbrenner's ecological framework has highlighted the varied levels of influence that affect children's development (Bronfenbrenner 1979, 1995). These range from the child him/herself, the family, child care/schools, neighborhoods and communities, and the larger social environment. The ecological framework has informed indicator development in a variety of ways, particularly because it emphasizes that child/youth development is affected by multiple and varied factors, both proximal and distal, many of which are not well-measured.

The "whole child" perspective, which recognizes that children's well-being goes beyond just being healthy or just excelling in school to include emotional well-being and social behavior, has also become widely accepted in the child development field (Moore and Theokas 2008). This understanding has contributed to a broader conceptualization of indicators of child and youth development.

Also, the lifecourse perspective from the medical and public health fields acknowledges that children's experiences at one age affect development and outcomes at a later age (Moore and Emig 2014). In other words, development is cumulative. The measure of Adverse Childhood Experiences reflects this orientation, as research has found that early trauma and deprivation are related to a host of subsequent problems (Anda et al. 2006).

An important advance with strong implications for the conceptualization and measurement of indicators is the notion that it is not sufficient to produce problem-free children. As Karen Pittman of the Forum for Youth Investment noted, "problem-free is not fully prepared" (Moore 2017). Children also need to develop character and behavior strengths; however additional robust measures of such positive outcomes are needed.

The distinction of risk, protective, and promotive factors arose from public health and prevention science paradigms and has further enriched the discussion of contexts (National Research Council and Institute of Medicine 2009). As noted, measures of poverty and family structure were reported in early indicators reports, which is appropriate, since they pose important risks for children's development. But measures of protective factors are also needed, such as consistent, high quality child care, health care, and safe neighborhoods (Moore 2017).

An important development for researchers was the establishment of the International Society for Child Indicators (ISCI) in 2005. ISCI is a professional organization created to support and foster collaboration on child/youth indicators among researchers, practitioners, and policy makers. Members represent varied countries from every continent around the world to learn, share methods, and integrate findings. The ISCI journal, *Child Indicators Research*, has provided a mechanism for US researchers, data experts,

policy makers, and evaluators to see themselves as part of an important and evolving field. In addition to sharing knowledge based on US experiences, US researchers have benefited from the exchange of ideas. For example, the distinction between child well-being and well-becoming (Ben-Arieh 2008) has been widely cited; and the notion that children's current well-being is important – not just their future productivity and eventual happiness – has become widely accepted in the US.

International agreements have also had some influence. For example, the UN Declaration on the Rights of Indigenous Peoples (UNDRIP) was adopted by the UN General Assembly in 2007, and there has been some movement in the US in the past decade or so for researchers to work respectfully with Native American Tribal communities. There are 573 Federally recognized Tribes in the US., and these Tribes represent considerable diversity. Moreover, deep distrust is often present and undermines efforts to develop data and conduct research. Like the US, many nations face this important challenge.

Another international perspective is provided by the UN Convention on the Rights of the Child. Many countries use the elements of the United Nations Convention on the Right of the Child to inform their indicator frameworks. However, US researchers tend to use developmental frameworks, as described above, to distinguish child outcomes from the contextual factors identified in the ecological model that influence outcomes (Moore et al. 2014).

### 1.3 Levels of Reporting Data

As data at the national level became stronger, states have sought to have data about their state. To address this need, Kids Count was inaugurated by a private foundation, the Annie E Casey Foundation, in 1990, to provide indicators at the state level (Kids Count 1990). Only ten indicators were included, reflecting the paucity of state-level information at that time. Two background measures assessing factors that affect children's development were included – the percent of children in poverty and the percent of families with children headed by a single parent. Three of the remaining eight measures reported on mortality, and five reported on negative outcomes, including dropouts, disconnected youth, juvenile violent crime arrest rate, the teen birth rate, and low birth-weight babies. Despite a limited set of indicators focused on negative indicators, Kids Count represents a break-through with its focus on state-level data. Moreover, the Annie E Casey Foundation has supported offices in every state under a variety of auspices to augment and disseminate information about children to state policy makers.

More recently, measurement systems for cities or communities have been developed as well. These include the Promise Neighborhoods Initiative, Strive, and the Opportunity Index, for example (Opportunity Index 2018). All of these efforts have been limited by gaps in data for states and cities, not to mention neighborhoods. In particular, subjective measures which require surveys or another strategy to obtain information about children's emotional/psychological well-being and social behavior at a local or state level have not been available.

Interestingly, the practice community has come to recognize the need for data that are theory-driven and research-based for program evaluations and logic models; this has stimulated demand for a broad array of constructs and measures. In particular,

program and community initiatives have responded favorably to the more positive perspective, and evaluators have been receptive to subjective measures of well-being. At the same time, however, many programs are still using measures of inputs, such as program attendance, as child outcomes in their logic models.

Medical practices in the US collect substantial data and represent another potential venue for future data collection at least on issues related to health (Moore et al. 2017). Christina Bethell and her colleagues at the Child and Adolescent Health Measurement Initiative reviewed twenty measurement frameworks used in twelve maternal and child health settings (Moore et al. 2017). Across these programs and initiatives, they found 800 measures in use. Not surprisingly, 37% focus on health care, services, and quality, while another 35% were found to measure varied social determinants of health (contextual factors in children's environments, people, and services, that can drive health inequities). A number of important gaps were identified, including socio-emotional functioning, positive health, protective factors, family well-being, and life satisfaction.

## 2 Lessons Learned

Substantial progress has been made in conceptualizing and measuring child well-being in the US, as well as in other countries. In the US, the separate fields that study child development, program/policy interventions, and indicators of child well-being have gradually come to communicate and cross-fertilize. Subjective indicators on issues such as mental health and goals, and private behaviors (such as substance use and sexual activity) are increasingly viewed as important. In addition, practitioners are increasingly data-driven and are seeking social and emotional measures, as well as positive and subjective measures. This provides a common platform to move forward. Some of the critical lessons learned include the following.

- The whole child model is recognized, as researchers, policy makers, and funders have come to agree that children's development must be assessed broadly. Four broad domains are commonly recognized, including Cognitive and academic development; Mental and emotional well-being; Social behavior; and Physical health and functioning. (The exact domains and their labels may vary slightly; but this is a widely-used set of categories.) Sometimes a fifth domain is suggested, e.g., Relationships because Relationships get left the capacity to have healthy relationships is bedrock to development (Roehlkepartain et al. 2017; Garris and Weber 2018).
- Where it makes sense, standard age breaks are being used to report on indicators, specifically, 0–5, 6–11, and 12–17. Because finer age breaks are often appropriate, each of these six-year categories can be divided in half: 0–2, 3–5, 6–8, 9–11, 12–14, and 15–17. Having comparable categories across U.S government agencies allows policy makers to have comparable information across outcome domains.
- While indicators for children of varied ages are being developed, substantial gaps remain in each age group, particularly for children between birth and entry into regular school, typically ages 0 to 5. Recent efforts to develop a measure of “Healthy and Ready to Learn” for the National Survey of Children's Health are

noteworthy because this health survey includes measures of cognitive attainment, self-regulation, and socioemotional well-being, not just health, for children ages 3–5 (as well as older children) (Ghandour et al. 2018).

- A common hierarchy of the types of indicators has been identified, as shown in Figure 1 from Child Trends' *Flourishing from the Start report* (Moore et al. 2016). Again, the specific labels may vary. However, as noted, there is general acceptance of the notion that varied *domains* comprise the whole child model. Also, within each domain, varied elements of well-being need to be conceptualized as the *constructs*. Next, *measures* of each construct are needed; these could be scales, indices, observations, assessments or other types of metrics. Finally, items are the specific questions, observational codes, or the individual items that comprise an assessment.
- The distinction between child and youth outcomes versus the risk, protective, and promotive contexts that influence these outcomes has gradually been recognized. Importantly, these kinds of distinctions are increasingly being made in the logic models developed by social interventions, as well as in the indicators field.
- A limited set of background and contextual factors has typically been used to break out subgroups in tabulations of child well-being data, such as the child's age, race/ethnicity, and some measure of socioeconomic status, such as poverty, receipt of school lunch, parent education, or family structure. A richer set of research-based contextual variables can include other factors related to policy or program services, such as immigration status, parenting style, domestic violence, authoritative parenting, neighborhood safety, or family routines, not just poverty.
- The importance of assessing positive development, not just problems, is now widely accepted. However, valid measures of positive outcomes are in short supply in the indicators field.
- The primacy of positive, sustained relationships has been recognized *both* as a critical developmental input and as a child/youth outcome; but appropriate measures that incorporate this distinction are not available.

- **Domain:** The broadest category of child well-being sub-areas.
- **Constructs:** The elements of child well-being that comprise a domain.
- **Measures:** The actual metrics used to assess a construct; this includes specific tools and methods for data collection and reporting, such as use of scales, indices, observational codes, etc.
- **Items:** The individual data fields, questions, or checklist codes that compose the measure.

Fig. 1 Flourishing from the Start: Hierarchy of the types of indicators (Reproduced from Moore et al. 2016)

- The significance for a child or adolescent of experiencing multiple supports *or* multiple adverse childhood experiences (ACEs) has been recognized (Sacks and Murphey 2018).
- The varied uses of indicators have been considered by researchers and practitioners (Brown and Corbett 1997). They include Description; Monitoring over Time; Goal Setting; Accountability; and Reflective Evaluation. Indicators are generally considered appropriate for the first three purposes, and caution is suggested for the fourth and fifth purposes.
- Given that information available at the city or community level has gaps and available indicators often exist within separate silos, it is necessary to develop ways to aggregate administrative data, such as school and health data, to inform decision-making.
- Brief measures that are meaningful, malleable, and measurable are needed (McKown 2017).
- Researchers have come to understand the importance of long-term experiences, such as chronic stress, long-term poverty, and family structure turbulence over time (Shonkoff et al. 2012; Duncan et al. 2010; Wu and Thomson 2004). However, longitudinal surveys at the national level are an endangered species in the US. In a time of tight budgets, longitudinal surveys may not be a top priority for policymakers; but they need to be sustained and expanded because they are essential tools for basic research and policy evaluation, as well as microsimulation models, in addition to longitudinal indicators at the population level (Moore et al. 2009).
- Numerous methodological challenges remain. For example, the process of identifying constructs and measures needs to reflect the perspectives of diverse minority populations, immigrants, and indigenous populations. In developing data collection strategies, constructs, and measures, it is critical to be sensitive to social and cultural differences. These encompass not only the frameworks and words that people use, but also their feelings about sharing information with non-family members. Parents may be more willing to discuss family strengths and their child's flourishing than problems. On the other hand, assessing positive constructs can introduce an upward bias, due to parents' tendency to report optimistically about their child. In addition, measures need to reflect cultural diversity in childrearing practices. Parents' view of what constitutes a high or low level of risk, for example, can vary across social groups.

### 3 Discussion and Conclusions

In summary, as this short history illustrates, it has taken decades for the US to develop an indicators system, and this work is not yet complete. As noted, early indicators work tended to focus on problem behaviors, such as school dropout, drug use, and teen births. Data tended to come from school-aged children and youth. Information about children between birth and school entry, was and continues to be, a major gap. Also, data at the state level, and particularly at the local level were, and are, thin; and measures of context are uninspired. In addition, while progress has been made, measures of positive outcomes and the subjective experiences



of children and youth, such as their attitudes, values, and goals, have been in short supply.

Fortunately, as each limitation has been identified, researchers, with input from practitioners, policy makers, and funders, have worked steadily to improve the breadth of the stock of indicators. Enhancing indicators for young children and indicators for use at the state and community level, however, continue to need attention, including an assessment of indicators that are appropriate for members of marginalized population groups, such as American Indians and Alaska Natives.

In addition, while numerous taxonomies have been suggested by researchers and practitioners (Fernandes et al. 2011), we lack consensus on an overarching framework that specifies domains, constructs, measures, and items. Specifically, we need a taxonomy that works across fields, such as the child development frameworks described in this article.

Cross-sectional surveys at the national level are the workhorses of the indicators world. Yet, the utility of administrative data for measures of inputs, outputs, and outcomes needs to be explored, especially at the state, Tribal, and community levels. In addition, up-to-date information from “big data” are becoming available. Whether, when, and how this information can be useful for understanding inputs, outputs, and outcomes needs to be explored.

Also, we need to do a cross-walk of international, national, state, and community indicators. This would make it possible to compare outcomes and trends at the international, national, state, and community levels, using the same measures across different levels. In particular, constructs should be comparable. If measures used at the community level or in a clinic need to be shorter than those used in national studies, there should be sufficient overlap in the measures and items to support a cross-walk across places. Having common constructs and measures across countries, such as the project Measuring and Monitoring Children’s Well-Being, represents a capstone accomplishment, allowing researchers, policy makers, and the public to compare and contrast the development of children and youth across nations.

Finally, indicator work needs to be widely shared in ways that recognize the many different audiences for the work and uses different strategies and messengers for each. Researchers need to do conference presentations, working papers, and journal articles, for example, while communities need more accessible communications, perhaps through technical assistance, tool kits, social media, workshops and presentations at meetings of community leaders.

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