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Kindergarten Transition and Readiness

Promoting Cognitive, Social-Emotional, and Self-Regulatory Development

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Preface

Each fall, four million children in the United States start kindergarten (National Center for Education Statistics, 2017a). For some, this is the first time they step foot in a classroom, having spent the majority of their childhood days in the care of family and friends. For most young children today, however, kindergarten is a continuation of their formal schooling experiences. About 70% of 4-year-olds currently attend some type of formal pre-Kindergarten (pre-K) program the year before kindergarten (National Center for Education Statistics, 2017b), a rate that has been steadily increasing since 1964, when only 17% of 4-year-olds attended a formal education program outside of their homes (Barnett & Yarosz, 2007). The recent expansion of opportunities for young children to attend pre-K programs is attributable, in large part, to investments made by the federal government to provide the Head Start program and by 43 states to offer their own publicly funded pre-K programs (Barnett et al., 2017). Adding to the pre-K landscape are different types of programs within the private sector, including not-for-profit programs, such as those locally operated in churches, public schools, and community centers, and for-profit programs that may operate in one location, in a handful of locations within an area, or as a multisite chain with sites across a region or the country.

The goals of these pre-K programs include promoting children's positive development in many domains—health, literacy, self-regulation to name a few; preparing children to succeed in kindergarten and during their later schooling; and reducing long-standing achievement gaps between children who grow up in poverty and their more advantaged peers (Office of Head Start, 2017). These gaps are evident at kindergarten entry (Zill, West, & National Center for Education Statistics (ED), 2001), persist throughout the later grades (Duncan & Magnuson, 2011), and have widened over the past 50 years (Reardon, 2013). Although these pre-K programs share similar goals, they may take quite different approaches for achieving them. There is considerable variation across pre-K programs with regard to their policies (e.g., whether teachers are required to have a bachelor's degree), hours of operation (half-day or full-day), curriculum adopted (e.g., High/Scope, Creative, or locally developed), and instructional approach (teacher-directed or child-initiated). As a result,

children in the United States step into the first day of kindergarten having had a wide range of prior experiences during the pre-K year, all of which are intended to prepare them to succeed in kindergarten and beyond.

For all children, no matter their prior schooling experiences or their social and economic backgrounds, the first day of kindergarten creates an abrupt shift in their day-to-day experiences. Upon entering school, they meet new people, participate in unfamiliar activities, and encounter different expectations for what is appropriate behavior. They will likely spend less time choosing their own activities and playing with their friends and more time sitting still at a desk and doing what the teacher directs them to do (Bassok, Lathem, & Rorem, 2016). They may wake up earlier, spend most of the day outside of the home, and not have a rest or nap time. The cafeteria food may not taste good, and the bathrooms may not have doors on the stalls. Children's immediate experiences during these first days, weeks, and months of kindergarten present new demands on children, their families, and their educators. Furthermore, children's capacities to successfully navigate these demands and adapt to this new setting have important implications for their immediate well-being during the transition to school, as well as lasting consequences for their success in kindergarten and throughout the later grades (e.g., Rimm-Kaufman & Pianta, 2001; Pianta, Cox, & Snow, 2007).

Coinciding with this abrupt shift in their experiences when they transition to kindergarten is a set of changes occurring *within* children during the early childhood years. Children aged five to seven are undergoing a qualitative shift in many aspects of their cognition, including their attention, memory, reasoning skills, language, and ability to understand others' perspectives (Sameroff & Haith, 1996). These shifts correspond with rapid changes in the neurobiological systems that underlie children's health, mental health, and school readiness skills, including the specific brain regions and networks associated with the prefrontal cortex and competencies linked to attention, executive function, and self-regulation (e.g., Masten, Gewirtz & Sapienza, 2013; Werner, 1995), which are a key set of skills needed to successfully navigate these new demands of kindergarten. Moreover, the early childhood years appear to be a time during the lifespan when the introduction of specific forms of enrichment may be particularly effective in helping build the kinds of skills that support their short- and long-term learning, health, well-being, and life success (e.g., Diamond & Lee, 2011; Heckman, 2007; Zelazo & Carlson, 2012). Thus, the kindergarten transition presents a window of opportunity during which investments of resources are most effective for keeping children on track toward a life of health and success.

How Can We Best Support Children During the Kindergarten Transition?

This question of *how* to best support the development of young children during the transition to kindergarten, especially those growing up in poverty or facing other forms of developmental adversity, is of urgent importance in the United States today (Roeser & Eccles, 2015). Children from economically disadvantaged backgrounds

begin kindergarten two or more years behind their classmates academically, and these differences persist or increase over time due to a variety of factors in the neighborhood, home, school, and classroom (e.g., Entwisle, Alexander & Olson, 2003; Ramey & Ramey, 2004). Over the past six decades, the early childhood education community has mobilized its efforts around two primary strategies to support children's well-being and success at kindergarten entry and beyond—(1) *providing access* to early childhood education programs and (2) *improving the quality* of these programs.

Indeed, research finds support for the positive effects of both providing access to and improving quality of early childhood education programs. For example, studies of three small-scale, locally developed and locally operated programs in the 1960s and 1970s (i.e., Abecedarian, Chicago Child-Parent, and Perry Preschool Programs) found positive effects of these programs on children's development that persisted into adulthood and resulted in economic benefits to society that greatly outweigh the costs of providing the programs (Ramey & Ramey, 2004; Reynolds et al., 2007; Mervis, 2011; Schweinhart et al., 2005). In contrast, findings from more recent studies (the Head Start Impact and Tennessee Pre-K Studies) of the effects of public programs have raised questions about their long-term benefits for children. Both of these studies (e.g., Puma et al., 2012; Lipsey, Farran, & Hofer, 2015) found positive effects of these programs on social and cognitive outcomes that were evident at the end of the pre-K year. By the end of kindergarten, first grade, and third grade, however, there were no differences between these groups on these outcomes, indicating that the early advantages of these programs had somehow dissipated after the program ended, a phenomenon known as "fade-out."

Given that access to early childhood education programs, alone, may not be sufficient to provide a lasting boost to children's long-term developmental trajectories, a second common approach to support the development of young children during the pre-K and kindergarten years has been to *improve the quality* of these programs, thereby enhancing their benefits for children who attend. Strategies to improve the quality of early childhood education programs include enacting policies (e.g., requiring pre-K teachers to have bachelor's degrees) and implementing various programs and practices (e.g., curricula, teacher professional development programs, quality monitoring programs) that can improve the quality of children's experiences within their classrooms.

Across a vast research literature on the topic of pre-K quality and children's development, some summary conclusions may be drawn. First, there is evidence that higher quality pre-K is positively associated with some aspects of children's development, including their academic, social-emotional, and self-regulatory skills (e.g., Mashburn et al., 2008; Cameron, Connor, Morrison, & Jewkes, 2008). Second, the effects of high-quality pre-K on children's development depend upon which aspects of quality are being considered. For example, the quality of children's direct social interactions with their teachers (i.e., process quality) has a stronger potential effect on children's development than those aspects of quality that are more distal to the child's direct experiences (i.e., structural quality), such as the number of children enrolled in the classroom or the level of education of the teacher (Mashburn et al., 2008).

Third, the effects of high-quality pre-K also depend upon children's background characteristics, with some evidence suggesting that higher quality pre-K experiences have a relatively stronger positive boost to development among children who experience greater risks related to their socioeconomic status (e.g., Mashburn, 2008; Peisner-Feinberg & Burchinal, 1997). Finally, there is ample evidence from intervention research showing that quality enhancement strategies, including curricula (Preschool Curriculum Evaluation Research Consortium, 2008), curricular supplements (Mashburn, Justice, McGinty, & Slocum, 2016), quality rating and improvement systems (Boller & Maxwell, 2015), and teacher professional development programs, such as coaching-based models to support early educators (Kraft, Blazar, & Hogan, 2016), can effectively improve the quality of pre-K programs.

These conclusions from research about pre-K quality and children's development must be interpreted with some caution. Evidence also suggests that the positive associations between pre-K quality and children's development are not found across all studies and tend to be small in magnitude (NICHD-ECCRN & Duncan, 2003; Perlman et al., 2016). In addition, there are methodological limitations with correlational studies related to selection effects that weaken the assertions from these studies that high quality *caused* these better outcomes (Mashburn, 2014). There are also notable measurement challenges in assessing pre-K quality and, specifically, the dimensions of quality concerning the social interactions between children and teacher(s) in the classroom (Mashburn, 2017). Finally, the effects of these quality enhancements on improving children's outcomes tend to be small (Kraft et al., 2016), and few studies attempt to investigate effects that persist beyond the pre-K year.

New Directions for Understanding and Supporting Children's Long-Term Development

Taken together, it appears that access to pre-K and high-quality experiences within pre-K are each promising approaches to support children's development; however, they may not be sufficient for promoting the long-term development of children as they transition from pre-K to kindergarten, particularly for children from economically disadvantaged backgrounds. This conclusion—that our two primary approaches to support children's development and reduce achievement gaps may not be effective in the long term—falls well-short of the ubiquitous promise that high-quality pre-K has lasting effects on children's development. These conclusions also lead to a new set of questions posed to the early childhood education community: *Why* do our two most promising strategies fail to produce long-term benefits for young children? *What* processes might we be overlooking in how we think about children's transitions to kindergarten and their long-term development? *What* new strategies—in addition to expanding pre-K access and improving pre-K quality—should we implement that will more effectively support children's long-term development?

The purpose of this book is to address these questions in ways that expand our conceptual thinking about the transition to kindergarten and inspire a new wave of strategies that produce positive effects on children's well-being in the first days of kindergarten, during kindergarten, and throughout school and life. The book contains chapters written by top researchers in developmental science and early childhood education. It includes theoretical contributions that aid our understanding about kindergarten transitions—for all children and among groups of children who experience different forms of challenges—and it describes strategies that can successfully support children's transitions during this window of time. The book also includes some illustrations involving data and analyses that demonstrate the methods that researchers use to study phenomena related to the kindergarten transition.

The first five chapters of the book introduce the topic of the transition to kindergarten. First, Yelverton and Mashburn lay out a general and integrative conceptual framework for understanding children's transition to kindergarten and long-term development that is grounded in developmental theory. The chapter identifies child, setting (home and family), and systems (e.g., pre-K system, K-12 system) that are involved in understanding children's kindergarten transitions. It then elucidates three key processes that directly affect children's long-term development—high-quality experiences within home and classroom settings, consistently high-quality experiences over time, and continuity in learning experiences, such that instruction is attuned to each child's current capabilities and grows increasingly complex over time. The chapter then provides examples of intervention strategies that have the potential to promote quality, consistency, and/or continuity of children's experiences during the transition from pre-K to kindergarten in ways that support children's long-term development.

Next, Skinner takes the perspective of the developing child during this transition to kindergarten and provides a fascinating description of the qualitative developmental shifts occurring within children aged five to seven. The chapter provides a rich discussion of theories and research about children's development of four key domains of outcomes during this time of life—social-emotional, motivational, cognitive, and self-regulatory skills. These theories help identify four fundamental needs that children have—close, caring relationships with teachers; intrinsic motivation; opportunities to reflect, communicate, and problem-solve; and opportunities to develop self-regulatory capacities—which have implications for how early childhood educators can effectively support children's development in these domains.

In the next chapter, Brock, Curby, and Cordier introduce the concept of *consistency* of young children's experiences within their early childhood classrooms and its importance for children's development. More specifically, they identify two underlying processes through which consistent, stable interactions during the school day help support children's development—by promoting emotional security between the teacher and the child and by preserving the child's attentional resources. The chapter also includes an empirical study that finds positive effects of the consistency of teachers' interactions with children, which illustrates the methodology that researchers use to investigate this question. Abry and colleagues then examine the concepts of consistency and continuity of children's experiences during the

transition from Head Start to kindergarten classrooms. Using data collected from a nationally representative sample of children attending Head Start, the authors compare the types of learning experiences children have in Head Start and kindergarten to illustrate dramatic shifts they experience when they transition from Head Start classrooms to kindergarten classrooms.

In the final chapter of the first section, Latham presents a descriptive picture of the children in the United States who are transitioning to kindergarten by summarizing data collected from a nationally representative group of entering kindergarteners in 2010. The chapter describes children's levels of school readiness in each of five domains, as well as the magnitudes of the income and black/white achievement gaps for each domain. Additionally, the chapter compares overall achievement and achievement gaps in 2010 and in 1998, highlighting historical changes in the overall levels of school readiness and changes in the achievement gaps among entering kindergarteners over the 12-year period.

In the second section of the book, the chapters consider the transition to kindergarten for children who experience different forms of adversity and challenge both before and upon entering school. These chapters expand up the general view of the transition to kindergarten presented in the first section of the book by highlighting the unique needs of specific subgroups of children as well as the strategies that may most effectively support these needs. More specifically, the section includes in-depth discussions of barriers and potential interventions to promote successful kindergarten transition for children who have diagnosed disabilities (Gooden and Rous), experienced adversity during early childhood (Pears and Peterson), are English language learners (Ansari and Crosnoe), are visually impaired (McConachie), or have different temperamental characteristics (White and colleagues), such as shyness, high activity levels, or low adaptability, that might differentially affect the transition.

The final section of the book builds from this base of understanding children's development during the kindergarten transition to provide examples of specific strategies that have been developed and implemented to support children's long-term development during the transition to kindergarten. Curby and colleagues begin this section by presenting results from a large-scale survey of kindergarten teachers' implementation of a common set of *transition practices* (e.g., home visits, open houses, record sharing), which provide universal supports to all children entering kindergarten. The authors conclude that effective transition practices are not being implemented in many schools, thereby missing this opportunity to better prepare children for kindergarten. They then go on to identify a number of barriers that impede teachers' implementation of these practices. Zulfiqar and colleagues extend this descriptive look at kindergarten teachers' use of transition practices to examine the processes through which these transition practices support children's development. The chapter hypothesizes, tests, and finds evidence that these kindergarten transition practices create closer relationships and more secure attachments between children and their kindergarten teachers at the beginning of the year, which in turn have benefits for children's development during kindergarten.

The next two chapters provide illustrations of *effective transition programs*—comprehensive and long-term approaches to support children and families during the kindergarten transition that are most often targeted to children and families with the greatest needs. Pears and colleagues describe the Kids in Transition to School (KITS) program for children entering kindergarten who have experienced early adversity. KITS includes programming for children and parents or other primary caregivers delivered during the summer before kindergarten and extends into the first 2 months of school. The chapter presents a robust set of findings showing the program's positive effects on children's outcomes, both immediately after the program and, for some outcomes, persisting through third grade. Nikolchev and Ponce then describe the Stretch to Kindergarten (STK) program—a kindergarten readiness program offered during spring and summer before kindergarten—targeted to children who have no prior school experience upon entering kindergarten. The program involves components for children and families to support children's social and academic development and family engagement in supporting their child.

The final two chapters provide examples of larger-scale *systemic approaches* to support children's development during the transition to kindergarten. Sarama and Clements describe the implementation and scale-up of TRIAD, a comprehensive model to support children's math development through instruction, assessment, and professional development implemented *across* the early grades. This chapter provides details of this approach, summarizes results of research that show positive long-term effects of the program on children's math outcomes, and discusses lessons learned about how to implement the model in diverse, early childhood settings. Finally, Kaurez's chapter focuses on the alignment of systems and, more specifically, toward a convergence of pedagogy, programs, and policies, within the early childhood system that serves 4-year-olds (e.g., alignment among state pre-K and federal Head Start and across the early childhood and K-12 systems). This coherent system of early childhood education that spans across the early childhood years would support quality, consistency, and continuity of children's experiences that, in turn, promote children's long-term development.

Our hope is that this volume will serve as a useful resource for researchers; clinicians; graduate students; related professionals such as pre-k teachers, pre-k directors and program administrators, pre-K policy makers, kindergarten teachers, school principals, public school administrators at local state and federal levels; and parents—who are interested in a deeper understanding about young children and their experiences during their transition to kindergarten, the processes that affect more and less-successful transitions, and the strategies that promote positive transitions to kindergarten and set the stage for children's long-term school success.

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Katherine C. Pears is a Senior Scientist at the Oregon Social Learning Center in Eugene, OR. Her research focuses on factors influencing school readiness and school adjustment in children facing early adversity such as placement in foster care due to maltreatment and poverty. She has designed, tested, and implemented preventive interventions for high-risk children to prepare them and their caregivers for the kindergarten transition.

Part I
Understanding Children's Development During the Kindergarten Transition

A Conceptual Framework for Understanding and Supporting Children's Development During the Kindergarten Transition

Rita Yelverton and Andrew J. Mashburn

Abstract This chapter presents a conceptual framework through which researchers, practitioners, and policy-makers can organize an understanding of children's development during their transitions from their primary preschool settings (e.g., homes, public pre-K programs, private pre-K programs) into the K-12 educational system. The first half of this chapter focuses on developing an understanding of the processes that impact children's Kindergarten transitions. We conclude that children's experiences of the Kindergarten transition are affected by the characteristics of children themselves, their educational settings, the large-scale systems that support children's educational experiences, and the way each of these is dynamic over time. We draw on research and theory to show that children's transitions are smoothest when their experiences in educational settings are of consistent high-quality and become increasingly complex over time to support children's developing skillsets. The second half of this chapter applies the conceptual framework to educational practice by showing how some common strategies for improving children's Kindergarten transitions fit within this framework.

A Conceptual Framework for Understanding and Supporting Children's Development During the Kindergarten Transition

The start of Kindergarten occurs at a time of life when young children are undergoing rapid changes in their neurological, biological, and cognitive systems (e.g., Sameroff & Haith, 1996; Werner, 1995) and when strategic investments of resources have the powerful potential to produce lasting positive impacts on children's well-being and development (e.g., Diamond & Lee, 2011; Heckman, 2007). To leverage this potential of intervening early in young children's lives, an entire system of early childhood education (ECE) has been built in the United States over the past 60 years. The system comprises different programs for young children and their families

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operating at federal (e.g., Early Head Start and Head Start), state (e.g., pre-K programs and Kindergarten), and local levels (e.g., pre-K programs in some cities). The system also includes many stakeholders from varied backgrounds—parents, preschool and Kindergarten teachers, preschool directors, school principals, and federal, state, district, and local policy-makers and program administrators—all of whom are working toward a common goal of supporting young children in ways that help them adapt to the new demands of Kindergarten and set the stage for later success in school and in life.

To achieve this goal, there are three general strategies at hand that function as the "levers" to improve the effectiveness of the system of ECE. These are *policies* that design and structure programs in ways that create favorable conditions for children to develop and thrive (e.g., full-day or part-day programs, minimum requirements for teacher education, maximum class sizes); *programs* for teachers, parents, and other primary caregivers that develop their skills in promoting experiences at home and school that foster children's development (e.g., teacher professional development, parent education); and *practices* that educators, including parents and professionals, implement directly with children that are focused on promoting specific domains of learning (e.g., curricula, social-emotional learning activities). The chances that our policies, programs, and practices will produce meaningful improvements in young children's lives, in the near- and long-term, are increased when these strategies are informed by an understanding of children's development during this time period. This includes an awareness of the developmental processes occurring within the child during this dynamic time of life and, more importantly, an understanding of the specific types of experiences that children need over time within their home and other primary settings that best support their long-term development and well-being.

The purpose of this chapter is to construct a "conceptual framework"—a comprehensive and integrative perspective about children's transition to Kindergarten—that helps organize our understanding of children's development from the ages of 5–7 when they transition from their primary preschool settings (e.g., homes, public pre-K programs, private pre-K programs) into the K-12 educational systems. The first half of this chapter focuses on developing a common understanding of the processes affecting children's development during the Kindergarten transition. In the second half of this chapter, we discuss the implications of this conceptual framework for implementing strategies that can most effectively support children's long-term development.

Understanding Children's Development During the Kindergarten Transition

A wealth of research has been conducted to understand how to support children's learning during early childhood and into their elementary school years. Given the complexity of this problem, it is not a surprise that the research on how to best

support early learning is also widely varied. For example, research on early learning focuses on *a diverse set of outcomes* (e.g., some studies focus on children's development of academic skills (Duncan et al., 2007), while others focus more on social and emotional skills (LoCasale-Crouch, Mashburn, Downer, & Pianta, 2008)). This research also uses *a diverse set of predictors* (e.g., some studies focus on what children's teachers and parents can do to support their learning, while others focus on systemic influences like growing up in poverty (Evans, 2004), and still others think about how children's own characteristics influence their development (Duncan et al., 2007)) and seeks to understand development across *a diverse set of timeframes* (e.g., some studies focus on how children develop during a single year of preschool (Mashburn et al., 2008), while others follow children across multiple years of school (Duncan et al., 2007; Mashburn & Yelverton, in press)). Despite these differences in research questions and study designs, this research from the field of early education is united by the goal of helpings us understand and support children's early learning. However, because it spans such a broad set of research questions and because studies that focus on different aspects of children's development may come to seemingly contradictory conclusions, it can be difficult for researchers, educators, parents, and policy-makers to organize our understanding of this research in a way that illuminates clear, actionable steps that can be taken to support children's development.

Child, Setting, and System Characteristics Supporting Children's Development

One way we can begin to organize our understanding of the literature on children's early education is to specify the key players in children's development and how each of those players can positively impact children's growth. These players might include parents (e.g., mothers influence children's social development; Ainsworth, Waters, & Wall, 1978), teachers (e.g., high-quality instructional interactions influence children's development of literacy skills; Mashburn et al., 2008), and peers (e.g., being in a class with highly verbal peers predicts children's language growth; Mashburn, Justice, Downer, & Pianta, 2009). Children themselves are also active participants in their own learning processes (Piaget, 1977). Children's learning may also be influenced by people in the educational community with whom they may never directly interact: for example, the policies put into place by a school district superintendent are likely to impact individual children's classroom experiences.

In this conceptual framework, we will organize early education research into three broad categories by the primary focus: (1) research that describes *processes occurring within the child* that lead to further learning and development, (2) research on *the interactions that children experience with members of key developmental settings* (e.g., at home or in a preschool classroom) that may foster learning, and (3) research on *processes that occur in larger-order systems*, such as federal, state, and

local education agencies, that influence the types of experiences children will have as they move through educational settings. We will describe the ways in which *children*, *settings*, and *systems* all have their own sets of characteristics, and we will review existing research to identify which of these characteristics foster and hinder children's growth.

A Child Perspective: Child Characteristics that Support Children's Development Each child brings their own personal characteristics, experiences, and skills into Kindergarten, and these qualities have a powerful impact on their development throughout school (Claessens, Duncan, & Engel, 2009; Duncan et al., 2007; Li-Grining, Votruba-Drzal, Maldonado, & Haas, 2010). Understanding children's unique sets of skills and characteristics is critical to understanding the Kindergarten transition for two reasons: first, supporting the development of children's skills throughout early childhood is one major goal of parents, educators, and policy-makers during this time and, second, children's characteristics, experiences, and skills may serve as resources to support their further development once they are in Kindergarten.

In order to understand how to best support children's development during the Kindergarten transition, it is important to identify which skills and characteristics are developing during these years. Children are experiencing major developmental milestones during this "five to seven year shift" (Sameroff & Haith, 1996) across a broad set of domains—social-emotional, motivational, cognitive, and self-regulatory. This view of child development as being differentiated across a multitude of important domains is matched in many national initiatives around ECE that defines these key developmental outcomes. For example, during the infant and early childhood years, the American Academy of Pediatrics has identified developmental milestones in the domains of health, motor, cognitive, and social skills (Hagan, Shaw, & Duncan, 2008). Furthermore, Head Start's Child Development and Early Learning Framework identifies specific standards of development for children aged 3–5 in 11 domains—physical development and health, social and emotional development, approaches to learning, language, literacy, math, science, creative arts expression, logic and reasoning, social studies, and English language development (Head Start, 2017). Clearly, supporting children's development during the Kindergarten transition means supporting skill development across multiple domains both within and outside of the traditional academic skills framework.

Children's characteristics, experiences, and skills may also serve as potential *resources* for children as they develop throughout Kindergarten. For example, early self- and emotion-regulation abilities can support development of academic skills (Li-Grining et al., 2010), linguistic skill can support development of self-regulatory skills (Peterson et al., 2013), development of social skills is a key piece of being an effective learner (Konold & Pianta, 2005; Zill & West, 2001), and early academic skills can support later academic success (Claessens et al., 2009; Duncan et al., 2007). In contrast, some child qualities may impede children's adjustment in a classroom: for instance, children who enter Kindergarten with externalizing behavior problems, who may be aggressive in the classroom, are at risk for academic struggles (Miles & Stipek, 2006).

Collectively, the types of characteristics at Kindergarten entry that predict children's growth throughout their academic careers have been extensively studied by school readiness researchers. The "school readiness" model for understanding the transition into Kindergarten gained attention at the federal level in the wake of the National Education Goals Panel's commitment to the goal that all children should start school ready to learn (NEGP, 1999). Over the following years, the NEGP's five proposed domains of school readiness—physical well-being and motor development, social and emotional development, approaches toward learning, language usage, and cognition and general knowledge—have been the topic of research and debate. In general, however, research has shown that children's skills in each of these domains at Kindergarten entry predicts at least some elements of their growth across multiple developmental domains as they move through elementary school (fine motor skills and general knowledge (Grissmer, Grimm, Aiyer, Murrah, & Steele, 2010), social and emotional development (Konold & Pianta, 2005), approaches toward learning (Claessens et al., 2009; Duncan et al., 2007; Li-Grining et al., 2010), language and mathematics ability (Duncan et al., 2007), prosocial behavior and aggression (Miles & Stipek, 2006)).

Overall, the research on school readiness shows the importance of focusing on children themselves as key players in their own learning during the Kindergarten transition. Each child enters school with a set of strengths and weaknesses that may contribute to their ability to take advantage of classroom opportunities for learning and which are likely to predict their development of the set of skills that are the desired outcome of schooling. Parents and educators who want to apply the study of school readiness to their own practice might use this information in a few different ways: (1) this research identifies which skills may be beneficial for children to learn by Kindergarten entry, so parents and teachers who work with pre-Kindergarteners may choose to focus instruction on some of those skills and (2) understanding an individual child's strengths and weaknesses at Kindergarten entry may help parents and teachers in constructing individualized programs of learning for children that utilize their strengths to make improvements in their areas of weakness.

In addition to personal characteristics and skillsets, each child also brings a unique set of prior experiences to Kindergarten entry. For example, while some children may have been enrolled in a preschool for years prior to Kindergarten entry, for other children, the first day of Kindergarten represents the transition from being cared for primarily by parents into a school setting with new expectations and a new social structure. The nature of children's experiences prior to Kindergarten may contribute to their development during Kindergarten in multiple ways. First, in accordance with school readiness literature, when children's experiences prior to Kindergarten have given them a set of skills and characteristics that are adaptive in the Kindergarten context, children may benefit (Claessens et al., 2009; Duncan et al., 2007; Grissmer et al., 2010; Li-Grining et al., 2010, Miles & Stipek, 2006). In addition, when children's previous experiences in classrooms share similarities with their experiences in Kindergarten, they may experience smoother transitions: for example, a child who is already familiar with classroom routines like sitting on a carpet and raising a hand to speak may have an easier time adjusting to Kindergarten than a child who has never practiced those routines.

Some sets of early experiences put children at risk for starting Kindergarten at a disadvantage. For example, children with experiences of living in poverty during their early childhood years are more likely than their higher-income peers to experience instability in housing, separation from their families, and toxic environmental pollution and are less likely to have experiences with books, computers, and high-quality preschools at an early age (Evans, 2004). Correspondingly, they are also at risk for starting Kindergarten with lower levels of academic and social-emotional skill than their peers from higher-income families (Reardon, 2011; Zill & West, 2001). Moreover, in addition to contributing to school readiness, children's early experiences with family and in preschool may predispose them to engage with Kindergarten in different ways. For example, children whose earliest social experiences are with parents who are highly responsive to their needs are more likely to enter school with a secure attachment style which leads them to seek out positive relationships with teachers, whereas children whose earliest social experiences have included less responsivity from primary caregivers may need additional teacher support to forge positive student-teacher bonds (Buyse, Verschueren, & Doumen, 2011).

In sum, the unique set of skills, characteristics, and experiences that each individual child brings to the table at Kindergarten entry is of great importance to understanding the Kindergarten transition. These skills serve both as potential resources for children's development and also as the outcomes that classrooms are hoping to foster. Understanding how these skills grow over time as children move from their pre-Kindergarten experiences into the Kindergarten classroom is fundamental to understanding the Kindergarten transition.

A Setting Perspective: Setting Characteristics that Support Children's Development Developmental settings can be thought of as the immediate social settings that children inhabit in which they actively participate and have defined activities, relationships, and roles. Children's direct experiences within these settings are one of the primary mechanisms through which learning and development occur (Hamre et al., 2013; Mashburn & Pianta, 2010).

Perhaps the most impactful setting for children's development is their home and family: children's caregivers and surroundings in the home setting begin to impact their development before they are even born (e.g., maternal prenatal depression predicts infant temperament, Field, 2011) and continue to be powerful factors in children's development across all domains throughout childhood (e.g., social (Ainsworth et al., 1978). cognitive (Vygotsky, 1980), language (Zimmerman et al., 2009), neurological (Huttenlocher, 2009)). In addition to children's home setting, their educational settings are also key developmental contexts. To understand children's development across the Kindergarten transition, two educational settings are particularly critical: ECE settings (e.g., Head Start, preschool classrooms) and Kindergarten classrooms. Similarly to children's home experiences, their experiences with teachers and surroundings in these educational settings will influence the ways in which they develop across all developmental domains (e.g., social (Buyse et al., 2011), cognitive (Vygotsky, 1980), language (Mashburn et al., 2008)).

Although the majority of children attend a school-based Kindergarten classroom (NCES, 2017), the specific type of ECE setting that children experience often varies from child to child. Some children may attend family childcare homes, in which a caregiver provides childcare out of their home to a small number of families. Other children may attend childcare centers, larger programs in which care is provided for children outside of the home at some sort of facility. Childcare centers can further range from facilities that provide only custodial care to facilities that include educational and social-emotional development as their goals (e.g., Head Start, Montessori). Finally, some children may not experience an ECE setting outside their own home.

Just as each child has their own set of particular characteristics that are important for their later development, each of these developmental settings has its own set of characteristics that can influence children's learning. When settings' characteristics are attuned to children's needs, skills, and prior experiences, this supports children's learning and growth. More specifically, research indicates that educational settings that offer well-organized, instructionally stimulating, and emotionally supportive experiences have positive impacts on children's skills development across domains (e.g., Howes et al., 2008; Mashburn et al., 2008).

One important setting-level characteristic involves the quality of the child's interactions within their homes, ECE classrooms, and other primary settings wherein the child spends substantial time. For example, ecological and social interaction theories of development (e.g., Bronfenbrenner & Morris, 1998; Vygotsky, 1980) applied to preschool classrooms (Mashburn & Pianta, 2010) offer explanations for how children's development occurs within ECE and Kindergarten classrooms. Namely, learning and development occurs through the child's back-and-forth interactions with adults, peers, and learning materials that occur on a regular basis and over extended periods of time, are appropriate to the child's current ability, and become progressively more complex.

More specifically, types of social interactions in classrooms that impact young children's development of academic and social-emotional skills include those characterized as emotionally supportive, well-organized, and instructionally supportive (Hamre et al., 2013). For example, Mashburn et al. (2008) found that emotionally supportive classroom interactions (e.g., positive climate, responsivity to children's emotional needs) were positively associated with children's development of social-emotional skills. Further, instructionally supportive classroom interactions (e.g., language modeling, concept development) were positively associated with children's development of literacy, math, and language skills during the preschool year.

Characteristics of instructional practices that children experience within their classrooms also affect children's development from ECE through Kindergarten. Instructional practices vary across ECE classrooms with regard to how much time is spent on academic instruction (e.g., math and literacy instruction), child-led activities (e.g., free-choice centers), and teacher-directed whole-group activities (e.g., book readings, group lessons). There is some empirical evidence suggesting that specific instructional practices in ECE classrooms are positively associated with children's development. For example, Ball and Blachman (1991) found that Kindergarten instructional practices focused on phonemic segmentation and

letter-sound combinations were positively associated with children's reading and spelling outcomes. Further, Claessens, Engel, and (2014) found that greater exposure to *advanced* math and reading instruction in Kindergarten was positively associated with academic skills; however, frequency of *basic* skills instruction was not associated with children's development.

Taken together, this body of research shows that the setting characteristics that are most important for children's development are those that directly impact the interactions children have with the people, objects, and ideas in their homes and classrooms. When settings include caregivers and teachers who are emotionally supportive, have a well-organized structure, and include instructionally rich and supportive stimuli and interactions which are appropriate to children's current level of understanding, children benefit (Mashburn et al., 2008; Hamre et al., 2013). Furthermore, the extent to which children benefit from these positive home and classroom interactions depends on the extent to which the interactions are sustained over time (e.g., children's teachers consistently interact with them in ways that are emotionally supportive, Curby, Brock, & Hamre, 2013) and become increasingly complex to match children's needs as they gain new developmental skills (e.g., once children have mastered early reading skills, their instruction shifts to target more advanced reading skills, Claessens et al., 2014).

The System Perspective: System Characteristics that Support Children's Development Each setting that children directly experience is supported by larger systems of support. These *systems* are the offices, agencies, and/or departments that determine the policies, programs, and pedagogical practices that structure the developmental settings in ways that affect the quality of a child's experiences within. For example, the Kindergarten classroom setting is situated within federal, state, and district Department of Education administrative agencies, and the policies and organizational structures of these agencies have implications for the experiences a child will have within their Kindergarten classroom. The systems that support ECE classrooms are less cohesive: while many are housed within federal, state, and local agencies like Head Start, many more ECE settings are part of private agencies with separate standards, and others still are fully independent.

At the federal level, the Department of Health and Human Service's Office of Head Start and the Department of Education set standards and provide supports for Head Start and Kindergarten programs, respectively. However, individual states and local governments may also set separate standards and provide separate supports that affect children's experiences in pre-K and Kindergarten. State accreditation systems exist to monitor the quality of private and home-based childcare settings. Other systems that exist to support children's early development may affect family, ECE, and Kindergarten settings: for example, the State of Oregon has instituted local Early Learning Hubs, which are organizations that attempt to unite and coordinate efforts to improve children's learning and well-being from the prenatal years to age 8, in family, school, and ECE settings. Collectively, these systems enact policies regarding minimum credentials for teachers, class size, and teacher-to-child ratios. They determine the types of programming and practices that are available to

children, families, and school staff. And they define standards of development, methods of assessing whether standards are met, and pedagogical approaches to promote development.

The systems that affect the family setting are even more varied than those affecting education settings. Families may be impacted by a range of federal, state, and district systems, such as those put in place to protect children from abuse and neglect and those that give assistance to low-income families. Families may also be impacted by private systems such as parents' workplace policies around flexible workdays, paid sick leave, and maternity and paternity leave.

Each of these systems has characteristics that may impact children's development by affecting the environments in which they are growing and learning. For example, federal standards surrounding learning goals and benchmarks for children's development can impact the nature of the curricula that children experience (Bassok, Latham, & Rorem, 2016). State accreditation standards for ECE settings may affect a variety of setting-level characteristics, including the child-to-teacher ratio in children's classrooms, and the types of routines and behavior management techniques used. For public schools, funding and staffing levels of programs may be set by higher-order government systems.

Decisions made at the system level have the potential to promote young children's development when they improve the quality of children's direct experiences within their immediate developmental settings (Mashburn & Pianta, 2010). When systems' policies and goals are well-aligned with children's needs and provide caregivers and teachers with the resources and training they need to implement high-quality classroom practices, children's development is supported. For example, systems may provide resources and programming targeted toward the Kindergarten transition to support schools' and teachers' use of transition practices, such as Kindergarten teachers communicating with parents, preschool-aged children visiting Kindergarten classrooms, teachers visiting students' homes at the start of the year, parent orientations, and in-school summer programming for pre-Kindergarten students (LoCasale-Crouch et al., 2008; Schulting, Malone, & Dodge, 2005). The success of this increased system-level support for children and families across the Kindergarten transition depends on the extent to which these practices directly involve students—when transition practices involve children themselves, these practices are more likely to close income-based gaps in school readiness (LoCasale-Crouch et al., 2008). Overall, the research suggests that when policies are designed to lead to improvements in those setting-level characteristics that support children's learning—in other words, when policies will help children's homes and classrooms to become more emotionally supportive, well-organized, and/or instructionally supportive—those policies are more likely to support children's learning.

The Dynamic Perspective: Children, Settings, and Systems Over Time Until this point, this chapter has discussed children, settings, and systems as being relatively stable. We have discussed children's traits that may benefit them in the school system, classroom qualities that lead to increased growth for students, and characteristics of system-level approaches that are likely to create meaningful change in

children's lives. However, over the Kindergarten transition, the characteristics of children, settings, and systems are *dynamic,* meaning they change over time. For example, as children grow, they will learn new skills that may act as new resources for their future development; classrooms that are disorganized at the beginning of a school year may become more organized over time as a teacher adapts to children's needs; and systems frequently implement new policies designed to support students' growth. Therefore, when thinking about the Kindergarten transition, it is not sufficient to understand how the characteristics of children, settings, and systems support children's growth—it is also essential to understand how these children, settings, and systems change over time and how these dynamics may support or hinder children's development.

The Dynamic Child Across the Kindergarten transition, children experience growth across many developmental domains. As discussed previously, this growth is the desired outcome of most home and school settings: federal and state systems have described learning benchmarks that children are expected to reach by specific ages (Council of Chief State School Officers, 2012; Shepard et al., 1998) and educational researchers are interested in describing both children's attainment of certain levels of knowledge and skill (e.g., Duncan et al., 2007) and the rate at which children are learning those skills (e.g., Li-Grining et al., 2010).

This dynamic growth is both underpinned by natural biological processes and conditioned upon children's experiences in key developmental settings. For example, children experience rapid growth in their prefrontal cortex between the ages of 4 and 6, and this neural development makes possible advances in entering Kindergarteners' cognitive, social, academic, and self-regulatory capacities (Durston & Casey, 2006). However, this neurological growth is maximized when children's environments are responsive, are language-rich, challenge them to perform to their fullest capacity, and set consistent, age-appropriate limits for children's behavior (Huttenlocher, 2009). The result of the interactions between these biological and environmental influences is growth across many important developmental domains: children develop physiological, psychological, and social capacities throughout their ECE and Kindergarten years, which they will draw on to engage in productive academic development throughout their school careers.

For parents, teachers, and policy-makers, whose goal is to support children's learning, understanding these dynamics can lead to supportive educational practices in a few ways. First, since individual children have different trajectories of growth, the interactions that support one entering Kindergartener might be less effective for another entering Kindergartener at a different developmental point. Further, since much of children's growth depends on their experiences with their worlds, to be effective in supporting children's growth, adults can ensure that children have high-quality experiences in developmental settings.

Dynamic Settings The previous section indicated that children tend to thrive in settings that are emotionally supportive, are well-organized, and include supportive instruction that is appropriately targeted to children's developmental level

(Hamre et al., 2013; Mashburn et al., 2008). However, much like the characteristics of children themselves, the characteristics of settings are dynamic. For example, the qualities of interactions a child experiences within their classroom may change over the course of a single day (e.g., there may be a difference in instructional quality between math center time and art time), from day to day (e.g., there may be differences in the overall level of classroom emotional support on the day of a field trip compared to the day of a standardized test), and from year to year (e.g., the behavioral expectations in a child's preschool classroom may look different than the behavioral expectations in their Kindergarten classroom).

Given these dynamics within children's educational settings, it is important for researchers, parents, teachers, and policy-makers to understand not only which types of interactions represent high-quality interactions that are supportive of children's growth but also how those interactions are or are not sustained over time. Developmental theory suggests that there are two major ways in which the dynamics of settings can benefit children: children benefit when they experience high-quality interactions repeatedly over the course of some extended period of time and between multiple settings (*consistency*; Bronfenbrenner, 1979) and when the content of children's interactions with the people, objects, and ideas in their settings becomes progressively more complex as children themselves develop increasing capacities (*continuity*; Bronfenbrenner, 1979; Dewey, 1938; Vygotsky, 1980).

Understanding how the dynamic characteristics of settings impact children's growth is complicated by the fact that different stakeholders in children's education may be invested in different developmental timeframes. For example, an educator who creates a school readiness promotion program in a preschool may be primarily interested in children's development from their preschool years up until their entry into Kindergarten. A Kindergarten teacher, in contrast, is likely more concerned with the classroom dynamics and learning that occur during the Kindergarten year. Educators who run summer programs for entering Kindergarteners may have an even shorter timeframe in which to create positive changes in children's lives. And parents support children's growth on a much longer time scale, as they are invested in their children's well-being from infancy through adulthood. To understand how to support children cumulatively, throughout their childhoods and into their futures as adults, it is necessary to understand the cumulative impact of dynamic settings throughout all of these shorter periods of time.

Dynamics of an Interaction Within Settings The educational theory and research that focuses on dynamic settings over time at the smallest level seeks to understand how children's experiences within a single interaction may shape their development. According to Bronfenbrenner's Bioecological Theory of Development (1979), the building blocks of human development are repeated, increasingly complex reciprocal interactions between developing individuals and their environments. Research that focuses on this type of dynamic process tracks children's moment-to-moment experiences with their world, to (a) describe how their development unfolds in real time and (b) determine whether there are types of interactions that are beneficial for children's learning. The interactions that are of interest to early educational

researchers may include children playing with learning materials in a Montessori classroom, children and teachers talking with each other, or children being read to and interacting with books.

The Classroom Assessment Scoring System (CLASS, Pianta, La Paro, & Hamre, 2008) is a popular measure that can be used to examine the ways in which children's settings are dynamic at the interaction level. To use the CLASS, observers directly watch and take notes on teachers' interactions with the children in their classroom and make ratings on the classroom's quality based on the interactions they see. For example, if researchers see interactions in which teachers spend time engaged in a back-and-forth conversation with children about children's work, where they help children work through learning problems using hints and scaffolding, those researchers might rate classrooms as having high-quality feedback for students. In contrast, in classrooms where teachers' interactions with students are relatively short and do not meaningfully engage with instructional content, where errors in students' understanding of subject matter are not adequately addressed during interactions with teachers, observers might rate classrooms as having lower-quality feedback for students. Research using this observational framework, which documents the quality of these moment-to-moment interactions within a classroom, suggests that over time, the accumulation of these high-quality smaller interactions leads to children's learning (Mashburn et al., 2008). Given that theory and research suggest that the accumulation of these small interactions are the most direct mechanism for children's learning, understanding how to ensure that the interactions children experience with their world are *high-quality*, and *sustained over time* in a way that is *aligned with children's developing skillsets and needs*, is key to supporting children's development throughout their educational careers (Bronfenbrenner, 1979).

Dynamics Across a Day: Consistency Within Settings Over the course of a given day, the nature and quality of the interactions children experience within any given setting are also dynamic. For example, in some classrooms, teachers are consistent in their provision of emotional support to children—they are similarly warm and caring to the children in the classroom regardless of what time of day it is or what activity is occurring. In other classrooms, teachers may alternate between expressing warmth, sensitivity, and caring during parts of the day and having a more neutral or negative affect during other times. This *consistency or inconsistency* in children's daily interactions is another important characteristic of their experiences within a setting.

Research shows that children's development benefits from predictability and stability in interactions, particularly when children experience interactions that are consistently high-quality and supportive of their developmental needs. Within children's home settings, caregivers' consistent responsivity to children's needs leads children to develop a secure attachment style (Ainsworth et al., 1978), which is a precursor to later social competence and achievement. In contrast, unpredictability and inconsistency in responsiveness can lead to children's cognitive and behavioral struggles down the road (Moss, Bureau, Beliveau, Zdebik, & Lepine, 2009). A simi-

lar pattern of findings is true in the classroom setting: Curby et al. (2013) found that in classrooms where teachers were consistent in their provision of emotional support throughout a day, children developed more academic skills and social competence and experienced reductions in problem behavior over the course of a school year. Overall, the research on the daily dynamics of characteristics of developmental settings shows that ensuring that children's experiences are of *consistent high-quality* should benefit children's development while experiencing variations in interactional quality throughout a day may be less optimal for children.

Dynamics Across a Day: Consistency Between Settings In addition to a single setting changing over the course of a day, a child may move between different settings. For example, on school days, a Kindergartener will travel from their family and home setting to their Kindergarten setting and back again. As a result of these setting changes, they may experience changes in caregiver responsivity, rules and expectations, peer groups, language, environmental stimuli, and more (Rimm-Kaufman and Pianta, 2000).

Developmental theory suggests that the extent to which children's daily experiences have elements of *consistency* as they move through different settings should support their development. Connections between family, neighborhood, peer, and school settings are at the heart of Rimm-Kaufman and Pianta's (2000) ecological and dynamic model of Kindergarten transition. This model proposes that when there are strong relationships between key players in children's developmental settings, children experience smooth Kindergarten transitions. Similarly, Bronfenbrenner and Morris (1998, p. 1019) concluded that "proximal processes cannot function effectively in environments that are unstable and unpredictable across time and space.… The cumulative effects at this [between-setting] level are likely seriously to jeopardize the course of human development."

Overall, research and theory that focuses on the impact of children's dynamic experiences within a given day suggests that children thrive when they experience *consistent*, *high-quality* interactions with their caregivers, peers, and teachers throughout a single day. For researchers and policy-makers who want to use research to make a positive impact on children's learning, this means that efforts targeted toward improving the abilities of all adults a child encounters during a day to be consistently emotionally, organizationally, and instructively supportive may be an avenue for improving children's learning. Similarly, infrastructure that enhances connections between children's developmental settings, such as connections between teachers and parents, to ensure that the types of educational interactions children experience at school are supported at home, may be beneficial for children's development (Rimm-Kaufman & Pianta, 2000).

Dynamics Across a Year: Adapting Settings to Children's Growing Skills The type and quality of interactions children experience within a given setting are not just dynamic throughout the course of a given day, but are also likely to shift across the course of a year. As the view of development now broadens to this larger time scale, setting dynamics can impact children in new ways. Specifically, although *consistent*

high-quality interactions still support children's development, it may also be advantageous for children's environments to *change* in ways that support children's developing skillsets and needs.

Kindermann and Skinner (1992) note that settings that optimize children's development attune themselves over time to the needs of growing children. This means that over time teachers may adapt their relationships, rules/expectations, and academic practices to best support the academic needs of individual students. When the interactions children experience within a classroom build on themselves over time to scaffold children through a series of progressively more complex skills, children's development benefits (Bronfenbrenner and Morris, 1998; Vygotsky, 1980).

For example, a body of literature shows that which types of curricula are most beneficial for children during Kindergarten depends on which skills children have already mastered by Kindergarten entry. When mathematics instruction during Kindergarten targets basic skills that the majority of Kindergarteners have already mastered by Kindergarten entry, children who already have those skills experience diminished growth in math skill development compared to children who move on to more advanced skills (Bodovski & Farkas, 2007; Engel et al., 2013). However, children who enter Kindergarten with lower school readiness continue to benefit from this more basic instruction. This research suggests that curricula are most effective when they are targeted to the specific needs of a classroom and should become progressively more advanced as children gain skills.

Conversely, some types of changes in interactions over the course of a year may be a barrier for children's optimal development. Sameroff's (1975) transactional model of development describes the ways in which interactions between children and caregivers may become progressively more negative through a sequence in which, for example, children's early problem behavior leads to negative caregiver attributions of that child, which lead to coercive caregiver-child interactions, which lead to increased problem behavior, which lead to increasingly difficult caregiver-child interactions, and so on and so forth. In this way, early negative interactions may be amplified over time, leading to increases in children's development of problem behavior and decreases in their development of the skillsets that are the desired outcome of schooling. Overall, when interactions are dynamic across a year in a way that matches children's developing skillsets, children benefit, but when these dynamics introduce mismatches between children's needs and their environments, children may struggle.

Dynamics Across a Year: Increasing Positive Ties Between Settings Similarly, the connections between children's developmental settings may change over the course of a year in ways that are beneficial or harmful to children's development. Rimm-Kaufman and Pianta's (2000) ecological and dynamic model of Kindergarten transition demonstrates that the Kindergarten transition is a time during which relationships between schools and parents are forming and developing relatively rapidly. The nature of these relationships may impact children's development over the course of their school careers. For example, the authors imagine a case in which a teacher has early negative interactions with a student's parents and therefore decides not to

contact the parent when a discipline problem arises and the problem worsens over time. When these relationships solidify in negative patterns early in children's school careers, this may be a barrier to creating consistency between the home and school contexts.

Conversely, when schools and teachers invest resources into forming positive relationships with parents during the transition into school, children benefit. For example, Sheldon and colleagues (Epstein & Sheldon, 2002), Sheldon, 2007) have studied the impacts of a school-based program for families of entering Kindergarteners on children's attendance in school during Kindergarten. These studies have shown that facilitating family-school connections is key to increasing student attendance and reducing chronic absence—two important factors in children's learning during Kindergarten.

Overall, the research on the dynamics of children's experiences within a given school year shows that children benefit from interactions that are of *consistent high-quality*, in which the content of children's interactions *becomes more complex* as children themselves develop and master new skillsets. Furthermore, within a school year, the interactions between teachers and parents may develop in ways that are beneficial or unsupportive for children's development. Positive parent-teacher relationships, in which high-quality communication can occur, support children's development. Since the transition into Kindergarten is a period of time during which relationships between teachers and parents are forming rapidly and may solidify into consistent patterns of positivity or negativity (Rimm-Kaufman & Pianta, 2000), efforts to create positive teacher-family relationships are particularly critical during this period of time.

Dynamics Between Settings and Systems Across Multiple Years Throughout their time in school, children generally move into new classroom settings each year, and each classroom setting may have different characteristics. Most relevant to the Kindergarten transition is the move from ECE to Kindergarten, in which children are not only transitioning into a new classroom but are also likely to be moving between larger-level systems. For instance, a child who attends public Kindergarten after participating in a private Montessori preschool moves from a classroom that is supported by a private organization, has a specific constructivist curriculum, and is accountable to state-run preschool licensing organizations into a school that is supported by and accountable to federal, state, and local governmental organizations, using a different set of academic standards and curricula.

The move between preschool and Kindergarten represents a time when the nature and quality of children's interactions undergo a particularly abrupt shift. Children's ECE settings are more likely to focus on supporting children's social, emotional, and self-regulatory development, whereas Kindergarten classrooms tend to be more academically focused (Rimm-Kaufman & Pianta, 2000). Kindergarten classrooms also often have more challenging behavioral expectations: children must sit still and focus on adult goals for longer periods of time (Rimm-Kaufman & Pianta, 2000).

While play is often a central part of ECE classrooms, play-based learning is increasingly absent from the Kindergarten setting (Bassok et al., 2016).

These shifts in experiences from ECE to Kindergarten classrooms may have implications for children's long-term development. In 1953, Dewey introduced the concept of *continuity of experience*, which posits that acquiring new knowledge involves a process of taking current knowledge from previous learning experiences and modifying it based on current experiences. Thus, the learner's prior experiences and current capacities are the starting place for developing new knowledge, and teaching must build upon those prior experiences and current capacities to make learning more meaningful and effective. Therefore, when shifts in children's experiences are abrupt and do not align with their developmental needs, children struggle.

Some setting-level changes are aligned with children's developmental needs and developing skillsets. For example, increasingly challenging behavior expectations are matched by children's rapidly developing capacities for self-regulation and so may represent an appropriate, positive learning experience for those children. However, some setting-level changes are not aligned with children's developmental needs—for example, children's play continues to support their development during Kindergarten (Berk, Mann, & Ogan, 2006), so the absence of play-based learning may not be a good fit for children at this age.

Research also shows that some elements of consistency between ECE and Kindergarten settings may support children's development across this transition. Consistency in instructional practice (i.e., amount of time spent doing literacy/language, math, whole-group, and child-chosen activities) across Head Start and Kindergarten classrooms is associated with children's development of academic and social-emotional skills during Kindergarten (Mashburn & Yelverton, in press). Similarly, exposure to classroom interactions that are consistently emotionally supportive and well-organized as children move from ECE to Kindergarten predicts children's development of social skills and reductions in problem behavior across the Kindergarten transition (Broekhuizen, Mokrova, Burchinal, & Garrett-Peters, 2016). Overall, when instruction is consistently high-quality and builds on itself with increasing complexity to match children's developing skillsets across multiple years, children's learning benefits.

Dynamic Settings and Systems Over Long Periods of Time Over time, the systems that support family and school settings may change, as governmental and private agencies work to enact policies and create programs to support children's development. While changes in these systems may happen more slowly than within- and between-setting changes, they often have far-reaching consequences for children's, families', and teachers' experiences. For example, a large cultural shift occurred in the United States with the implementation of the No Child Left Behind (NCLB) Act in 2002, which required that all public school students third grade and older take standardized tests and instituted punitive measures for schools in which students did not hit state benchmarks. Between the years preceding the implementation of NCLB and the years following, the types of proximal processes that children experienced

within a typical Kindergarten classroom changed. Specifically, between 1998 and 2006, US Kindergarteners' classrooms evolved to include more interactions that focused on literacy and fewer on social sciences, art, and physical education, moved from spending 56% of instructional time on child-directed activities to 33%, and changed to focus more on supporting children in skills that had previously been in the first grade curriculum, such as conventional spelling (Bassok et al., 2016). It is likely that these changes in the nature of interactions children experience within their classrooms as a result of these large-system changes in educational policy impact their academic development.

In sum, this dynamic perspective about understanding children's development finds that settings and systems can promote children's development at four different levels of time: within a given interaction, within a given day, within a given school year, and across multiple school years (see Table 1). In addition, these results identify two major types of dynamics at work that can support children's development: (1) children's development is supported when children experience interactions that are *consistently high-quality* and (2) children's development is supported when the content of those interactions becomes *increasingly complex* in ways that match their own developmental levels. Furthermore, this is both true within a given setting (e.g., consistency of children's classroom experiences of emotional support within a day supports their learning, Curby et al., 2013) and between settings (e.g., positive connections between children's families and their schools can support their learning; Epstein & Sheldon, 2002; Rimm-Kaufman & Pianta, 2000).

Supporting Children's Development During the Kindergarten Transition

In the previous section, we reviewed theories and research about young children's development, which resulted in a comprehensive conceptual framework that helps organize the complex set of factors that affect children's development during these critical years. More specifically, the conceptual framework identified four salient perspectives for understanding children's transition to Kindergarten—child, setting, system, and dynamic. In addition, using a dynamic perspective, it elucidated two key sets of experiences that directly support children's long-term development—consistently high-quality interactions with adults and peers within and between home and school settings and experiences that are appropriate for the child's current capabilities and become more complex as the child develops. These conclusions have clear implications for how stakeholders charged with supporting young children during the early childhood years can most effectively support children's long-term development—the strategies must promote consistently high-quality experiences that are attuned to the child's capabilities and become appropriately more complex over time (see Table 1 for optimal strategies and examples that support effective interactions during the Kindergarten transition).

Table 1 Four types of effective interactions during the Kindergarten transition

Time level	Setting level	Optimal strategy	Examples
Interaction	Within a setting	Engage in interactions that are high-quality: emotionally supportive, well-organized, and instructionally rich	A teacher reads a book with a child and talks through "What do you think will happen next?" and why
Day	Within a setting	Maintain consistent high-quality	A teacher greets children with a smile and a high five in the morning. Throughout the whole day, the teacher praises children's thinking and lets them know that he cares about them
	Between settings	Maintain consistent high-quality	A child's teacher and parents create a plan to help reduce a child's aggression. The same rules apply to her interactions with her siblings as her classmates, and those rules are enforced consistently, regardless of whether she is in the classroom or the home
Year	Within a setting	Increase complexity of instruction to match children's developing skillsets	A child arrives in a classroom who struggles with emotional outbursts. His teacher starts working with him to recognize his emotions. Once he is able to recognize strong emotions, she teaches him strategies for calming himself down. At first, his teacher provides extra support to help him remember these strategies, but by the end of the year, he is expected to be able to use them on his own
	Between settings	Develop stronger relationships	Over the course of a year, a teacher and parents communicate about a child's strengths and needs. Over time, the parents and teacher grow to trust each other, and the parents become more involved with the school
Multiple years	Between settings and systems	Increase complexity of instruction to match children's developing skillsets	During preschool, many children learn to recognize the first few letters of the alphabet. When these children enter Kindergarten, the curriculum is modified to add more challenge for these children instead of repeating the letters they already know
		Instruction builds consistently on children's previous experiences	Many children in a classroom are transitioning into Kindergarten from a specific local Head Start. The Kindergarten teacher communicates with the Head Start director to find out which curriculum these children were using and adopts elements of that curriculum into her own practice

In the next sections, we discuss three types of commonly implemented strategies to support children's development during the transition to Kindergarten and highlight the ways in which each has the potential to promote children's long-term development. The first is a child-level strategy—transition practices and programs—that supports children's transitions to school by affording young children opportunities to become acquainted with the new school, Kindergarten classroom, and/or teacher before the school year begins. The second strategy is a setting-level strategy—expanding access to pre-K programs—that supports children's transitions to Kindergarten by creating new social settings and structures (i.e., pre-K classrooms) that provide young children opportunities to develop a comprehensive set of skills the year before Kindergarten to help prepare them to succeed in school. The final strategy is a systems-level strategy—aligning pedagogy, programs, and policies across the multiple systems of ECE and K-12—that helps create a more seamless and unified system of ECE which offers learning experiences to children that are consistent over time and build upon the child's current capabilities.

Transition Practices and Programs A common type of strategy to support children's well-being upon transitioning to Kindergarten is one in which, prior to Kindergarten, the child is provided opportunities to become acquainted with their new teacher and the school and classroom. There are a number of specific types of these acquainting strategies, such as the child attends an open house, meets with their teacher, or observes the classroom, the teacher visits the child's home, and the teacher calls the child or sends the child a letter. These strategies are relatively inexpensive to implement, and there is some evidence that they promote children's positive adjustment in Kindergarten (LoCasale-Crouch et al., 2008; Schulting et al., 2005). In addition to transition practices, there are also transition programs, which are more intensive strategies to support children's transitions to Kindergarten before, during, and after the start of Kindergarten.

Transition practices have the potential to improve children's long-term development in two ways. First, acquainting the child with the new teacher begins the process of cultivating their relationship prior to the beginning of the school year. From the perspective of the child, these early connections then serve a resource when the child transitions into Kindergarten. For example, from these early interactions, the child may begin to view the teacher as a secure base of attachment; as such, the child may be more willing to explore and take risks in the new Kindergarten classroom, be positively engaged in activities, and be a partner in warm and supportive interactions with the teacher. These positive interactions at the beginning of Kindergarten directly support children's development during Kindergarten. In addition, strategies that acquaint the child with the new environment will allow the child to learn about the activities they will encounter and the expectations for behaviors. Thus, upon entering the new setting, the activities and behavioral expectations are organized in ways that are familiar. This will enable the child to effectively manage and regulate their behavior and, in turn, be better able to capitalize on learning opportunities within the classroom that impact their cognitive, academic, and/or social-emotional outcomes.

The ways in which transition programs are hypothesized to affect children's positive development at Kindergarten entry are similar to transition practices—they establish early relationships between children and their elementary grade teachers and/or familiarity with the routines of the school and classroom setting. This can create more supportive interactions within the home and in each grade. Furthermore, the provision of ongoing resources to the child and their families during elementary school can help build relationships between home and school settings and promote interactions that are consistently high-quality and attuned to the needs of the child in both settings. Despite the benefits each of these two transition strategies to improve the quality of children's interactions within the Kindergarten classroom and/or home settings, most do not explicitly ensure that children experience consistently high-quality experiences across grades that become increasingly complex and are attuned to their current capabilities.

Access to Early Childhood Education Programs A common setting-level transition strategy to promote positive transitions and development is to create opportunities for young children to attend ECE programs before they enter school. Kindergarten is considered the first large-scale transition strategy implemented in the United States. Friedrich Froebel is credited with the creation of Kindergarten in Germany in the 1830s, and it was widely adopted in the United States in the early twentieth century after it was showcased at the 1904 World's Fair in St. Louis (Froebel Foundation, 2017). One purpose of Kindergarten was to provide experiences in a formal education setting that help children make a successful transition from their homes—the primary developmental settings during the first 5 years of life for most children in that era—into the more formal system of public education. The specific goals of Kindergarten at that time were to promote children's development of social skills through activities such as games, dancing, creative play with toys, and observing and nurturing plants (Froebel Foundation, 2017).

Since its introduction to the United States as a strategy to assist children's transition from home to the school setting, Kindergarten has formally become part of the institution of public education. Yet, the difficulties that children have transitioning to school remain, as evidenced by the prevalent problems that Kindergarten teachers report about children's adjustment to school (Rimm-Kaufman, Pianta & Cox, 2000). A similar transition strategy has been more recently adopted—the expansion of pre-Kindergarten programs for 4-year-olds. Since 1964, the year before Head Start began, the percentage of 4-year-olds who attended a formal pre-K program has increased from 17% (Barnett & Yarosz, 2007) to approximately 70%, with approximately half of those children currently enrolled in publicly funded programs (Barnett, et al., 2017).

The expansion of opportunities for children to attend ECE programs may positively affect children's transitions to school in a number of ways. First, these strategies are hypothesized to provide children with high-quality experiences within a classroom setting, which directly impact children's development during this year before Kindergarten. Second, through these experiences, it is expected that children gain familiarity with formal education settings in general and acquire a repertoire of

behaviors that are appropriate for the different school-based contexts. Then, as children transition from pre-K into Kindergarten, their familiarity with the routines of school can ease the transition by helping the child more easily adapt to the new demands of the Kindergarten classroom.

However, the power of pre-K in preparing children to succeed in Kindergarten depends upon whether pre-K and Kindergarten programs are administered and implemented in ways that build seamlessly on each other. When this is the case, the child's Kindergarten experiences will be familiar and predictable and build upon the current capabilities of the child. As it currently stands, however, there is an almost universal lack of alignment between the pedagogy, programs, and policies across pre-K and Kindergarten systems. As a result of these disconnections, young children's experiences in pre-K settings may not adequately prepare them for Kindergarten classrooms in ways that promote their long-term development.

Aligning Systems A final strategy is a systems approach to supporting children's long-term development through the alignment of pedagogy, programs, and policies across the multiple subsystems that support young children during this time of life. This includes alignment between systems within ECE (Head Start, state pre-K programs, private programs) and alignment between these ECE systems and K-12 systems. According to Kagan (2010), alignment strategies may target three components of these systems. *Pedagogical alignment* strategies build connections among three components of pedagogy that children directly experience: the standards of development that the child is expected to attain at a given age or stage, the assessments that are used to determine whether the child has achieved the standards, and the types of instructional and learning experiences in these settings, including the curriculum, teaching philosophy, expectations, and perspectives about children (Scott-Little & Reid, 2010). *Programmatic alignment* strategies connect across systems the non-pedagogical resources and services that promote the child and family's health and well-being. *Policy alignment* strategies connect across systems the policies and regulations that promote high-quality experiences within early education and care settings.

There are at least three different types of systems alignment. "Horizontal alignment" (Bogard & Takanishi, 2005; Kagan, 2010) connects the pedagogy, programs, and policies across the multiple, concurrent subsystems of ECE and care that serve children of the same age cohort in order to create a more integrated and coherent system. As it is now, the system of ECE involves multiple entities (child care, state pre-K, Head Start, private programs) that adopt different standards of development, assessments, pedagogy, policies, and programs. Programs target children of different ages from different cultural, ethnic, and economic backgrounds; they are delivered in different settings, including schools, centers, homes, and churches; they offer different types of services in addition to the direct care and education provided to children; they have different policies and regulations; they adopt different standards of development and methods of assessing whether children achieve them; and they are based upon different educational philosophies and use different instructional approaches for teaching young children. As a result of this fragmented,

loosely organized "nonsystem" (Pianta, 2010) of ECE, a cohort of children who simultaneously enter the K-12 system come with a vast array of experiences that may be neither similar to their peers' experiences nor aligned with the types of experiences they will encounter in this new system. Thus, horizontal alignment is intended to bring together the multiple, coexisting systems of ECE and care in ways that build a more coherent system of ECE in which settings are organized and regulated in similar ways, and children come to Kindergarten with a more common set of prior experiences.

A second, complementary type of alignment is "vertical alignment," which focuses on uniting the ECE and K-12 systems in three different areas: pedagogy, programs, and policies. The powerful potential of vertical systems alignment is clear when pedagogy is aligned across the ECE systems and K-12 systems. When standards of development are aligned across systems, children are likely to experience activities and instruction that focus on their attainment of the same set of outcomes. Furthermore, when assessments of children's attainment of these standards are aligned across systems, the results from assessments made in the ECE system may be carried forward to new systems to guide instruction. When instruction is aligned, children's experiences within their ECE and KG classrooms build upon their base of knowledge. As discussed in the first section of this chapter, these are key processes that directly affect children's long-term development.

A third type of alignment is pedagogical alignment within pre-K systems and within Kindergarten systems. Alignment of pedagogical content *within* a setting involves connecting the standards of development, the methods of assessing children's attainment of these standards, and the pedagogical approaches that support children's attainment of these standards. Pedagogical alignment strategies begin by defining the standards of development that children are expected to attain over the course of and by the end of their time within a specific setting. For example, the previously described Head Start standards of development (Head Start, 2017) identify very specific behavioral indicators relating to 11 different developmental domains that 3–5-year-old children are expected to achieve.

Once standards or goals for developmental progress are made clear, a program or setting then selects and implements periodic child assessments to determine each child's status and progress toward meeting each standard. These assessments give the teacher information about the child's current skills in each developmental domain. It is expected that the teacher will use this information to provide learning opportunities that are attuned to the child's current strengths and needs. Thus, the types of learning opportunities that the child experiences are more likely to be attuned to their ability level and promote their attainment of the developmental standards that the program has defined as its goal.

Despite the potential benefits of aligning systems for promoting children's learning and development, a tension emerges when implementing this strategy. Across the systems of ECE, there is wide variability in the standards of development, assessments, instructional approaches, policies, and programs; and there is validity to and support for all of these approaches. Thus, building a unified system with common features may force some systems to be modified in ways that are different

from how they are currently structured, which presents a barrier to successful alignment across all systems. This tension is perhaps more profound when attempting to align early childhood and K-12 systems. Many early childhood systems focus on children's independent exploration and discovery, which are guided by developmental standards of creativity, self-expression, self-regulation, and social skills and achieved through self-guided instructional activities. In contrast, many K-12 systems' standards of development relate to academic outcomes that align with the common core standards and are achieved through teacher-directed activities or independent seat work. Thus, successful alignment across these systems requires the development of a shared view about the appropriate developmental standards, assessments, instructional practices, programs, and policies, and the wide variability among these systems presents challenges in creating a fully coherent system that supports children from birth to third grade.

Conclusions

This chapter described a theoretical framework for understanding how to best support children and families during the transition into Kindergarten. This framework posits that (1) *children*, the developmental *settings* in which they learn, and the larger *systems* that support those settings are all important to children's development; (2) the characteristics of children, settings, and systems are *dynamic over time*; and (3) children's development is optimized when the interactions they experience in their developmental settings are *high-quality*, are relatively *consistent* within and between settings, and become *increasingly complex* over time to match children's growing capacities.

This conceptual perspective gives policy-makers, researchers, and educators a variety of possible areas to target efforts to improve children's experiences during the Kindergarten transition. We can enact strategies that improve the quality of children's interactions within home, ECE, and classroom settings. We can enact strategies that increase the consistency of children's positive experiences in these settings, either by making it possible for caregivers to create consistency within a setting or by ensuring that as children travel between these settings, their experiences are stable and predictable. Finally, we can enact strategies that ensure that the content of children's interactions becomes increasingly complex over longer periods of time, as children themselves develop new capacities and needs.

We described three specific types of strategies in use in the US school system today to promote children's development during the Kindergarten transition—use of transition practices and programs, expanded access to pre-K, and alignment of pedagogy, programs, and practices between the many systems that comprise the field of early education. Although one of these strategies focuses primarily on the child, one focuses primarily on building effective settings, and one focuses primarily at the system level, each incorporates practices that fit into this theoretical framework. Transition programs create predictability for children not only across years of

their early childhood educations but also between home and school settings when families are brought in as key members of these transition programs. Pre-K is designed to give children access to high-quality, emotionally and instructionally supportive interactions from an early age. And alignment of pedagogy across systems helps to ensure that children's experiences are consistent and become more complex with time as they transition from early childhood into the K-12 system.

To use this framework to support practice, however, we recommend noting not only where strategies *do* fit into this framework but also where they *do not* fit into the framework, since these missing pieces are likely where programs can make improvements that will further boost their efficacy. For instance, if alignment strategies focus on creating consistency between settings without simultaneously promoting high-quality within settings, these strategies are not likely to be effective. Transition practices may be most effective when they are maintained over some time to promote deepening school-family relationships. High-quality pre-K instruction is most effective when it is built on in increasingly complex ways as children move to Kindergarten. When strategies focus on the strengths and needs of the child, promote high-quality interactions in school and at home, create consistency within and between developmental settings, and ensure that children's instruction builds on their previous learning to become increasingly complex over time, children should experience smoother transitions into Kindergarten and greater success throughout the early elementary grades.

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Children's Developmental Needs During the Transition to Kindergarten: What Can Research on Social-Emotional, Motivational, Cognitive, and Self-Regulatory Development Tell Us?

Ellen Skinner

Abstract The transition to Kindergarten is precisely aligned with a period of crucial individual development—a window of qualitative change so significant that it is sometimes referred to as "the five to seven year shift." The goal of this chapter is to focus on that qualitative shift by drawing together the changes in social-emotional, motivational, cognitive, and self-regulatory development that normatively take place during this window and to highlight their implications for identifying children's "developmental needs" during the transition to Kindergarten. The chapter is divided into four sections: one each on social-emotional, motivational, cognitive, and self-regulatory development. Within each domain, the primary normative developmental tasks during the 5–7-year shift are described, and the kinds of supports children typically need to negotiate these tasks successfully are summarized. These sections also consider differential development in each domain, describing the needs of children whose previous experiences at home or school did not prepare them to meet age-graded milestones. The conclusion section integrates information about these developments wholistically, based on the assumption that the success of students before, during, and after the transition to Kindergarten depends on whether educational programs and families come together to meet young children's developmental needs.

As research on the transition to Kindergarten attests, young children's entry into formal schooling entails many changes: a new classroom, teacher, and cadre of classmates; a more academic curriculum with more structured learning activities; greater demands for focused attention, participation in whole group activities, and compliance with rules and routines; and expectations for more mature, prosocial, and cooperative interactions with peers (Kagan & Tarrant, 2010). Given these many

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challenges, it is not surprising that the transition to Kindergarten marks a potential "turning point" in young children's academic careers—with the success of their adjustment (i.e., whether students start strong or falter across this transition) reverberating across successive years in school (Duncan et al., 2007; Pagani, Fitzpatrick, Archambault, & Janosz, 2010). As a result, many researchers and interventionists have focused on ways to prepare young children prior to the transition or to provide supports during the transition, in order to maximize their success. These programs and supports seem to be especially important for children from low socioeconomic, ethnic minority, and immigrant backgrounds, who otherwise are more likely to start (and continue) at a disadvantage (e.g., Zill, Collins, West, & Hausken, 1995).

A fascinating facet of the transition to Kindergarten is that it is precisely aligned with a period of crucial individual development—a window of qualitative change so significant that it is sometimes referred to as "the five to seven year shift" (Sameroff & Haith, 1996). The goal of this chapter is to focus on that qualitative shift by drawing together and summarizing the changes in social-emotional, motivational, cognitive, and self-regulatory development that normatively take place during this window and to highlight their implications for identifying children's "developmental needs" during the transition to Kindergarten. An assumption underlying this chapter is that the success of students before, during, and after the transition to Kindergarten will depend on the extent to which educational programs and families (and the larger society in which they operate) come together to meet these needs.

A second assumption is that children's needs at the transition to Kindergarten are a function of both prior development and prior experience, which are inextricably intertwined in children's current functioning. This means that some students, in the snapshot taken at the starting line of Kindergarten, will be developmentally more advanced and some will be further behind on any profile of normative milestones. Hence, this chapter worries about the *sequence* of these developmental needs, and how they may build upon each other, in making suggestions about priorities in programs and practices. The third assumption is that it is no accident that the major developments described in this chapter coincide with the first major school transition. Research shows that all of these individual developments can be shaped by students' experiences in school. By the same token (although not backed up to the same extent by research), it seems highly likely that these developmental shifts are at least partly responsible for the decision, found in societies worldwide, to organize children's schooling so that it starts exactly during this age-graded window. The 5–7-year shift has been referred to in historical texts (that discuss, e.g., the timing of children's initiation into religious or work activities) as "the age of reason," suggesting that societies past and present recognize this normative developmental shift as signaling children's readiness for more explicit participation in societal socialization practices, like school.

This chapter is divided into four sections: one each on social-emotional, motivational, cognitive, and self-regulatory development. Within each section, I describe the primary normative developmental tasks in that domain during the 5–7-year shift and summarize the kinds of supports children typically need to negotiate these tasks successfully (see Table 1). I also summarize differential development in each

Table 1 Children's developmental needs across the transition to Kindergarten

Developmental need #1: close and caring relationships with teachers
Warm and trusting interpersonal relationships with teachers are the foundation for all of children's subsequent learning and development
Functions close teacher-student relationships serve:
Provide a signal that students are safe and therefore ready to learn
Serve as a secure base when students encounter problems or need help
Contribute to a mutually responsive and cooperative orientation toward teachers
Contribution to developing self-systems:
Nurtures children's sense of *relatedness* in school—feelings of belonging and welcome in the classroom
Strategies teachers can use to foster close relationships:
Pedagogical caring: warm, affectionate, and sensitively attuned interactions
Constructive and supportive responses to distress and misbehavior
Personalized and welcoming classroom, with connections to families
Developmental need #2: intrinsic motivation and love of learning
Children's curiosity and enthusiasm are precious energetic resources that fuel active learning and development
Functions intrinsic motivation serves:
Promotes students' engagement in academic work
Supports persistence in the face of setbacks and difficulties
Channels inherent love of learning into students' convictions that educational activities are valuable
Contribution to developing self-systems:
Supports children's exploration and discovery of their own lifelong interests and passions
Strategies teachers can use to foster intrinsic motivation:
Academic work that is engaging: active, interesting, cooperative, purposeful, and fun
Learning activities that are connected to students' own interests, prior learning, and experience
Authentic meaningful tasks grounded in real-life concerns of the larger community
Developmental need #3: reflection, communication, and problem-solving
Explicit cognitive representational systems, successively differentiated and elaborated, underlie the development of language, thought, and problem-solving
Functions representational systems serve:
Help children make sense of their own internal experiences—as a first step to intentionally engaging them during regulatory or coping efforts
Underlie communication tools that aid interpersonal negotiations and relationships
Support important cognitive advances in problem-solving and executive function
Contribution to developing self-systems:
Builds confidence, self-efficacy, mastery, and acquisition of strategies for self-regulated learning
Strategies teachers can use to foster representational systems:
Conversations that ask children to reflect on and express their feelings and thoughts and to reflect on and listen to those of others

(continued)

Table 1 (continued)

Educational activities that emphasize reflection and expression across the curriculum, including music, dance, writing stories, poems, plays, or songs
Disciplinary encounters that incorporate discussion of goals and alternative strategies
Developmental need #4: self-regulation, coping, and an internal moral compass
Autonomous self-regulation allows children to intentionally guide and modulate their own actions and emotions and to resolve conflicts between their own goals and those of others
Functions self-regulation serves:
Allows children to follow classroom and school rules and to comply easily with teachers' requests for attention and engagement
Helps children manage their relationships with peers, interacting in socially appropriate ways, and using prosocial means to resolve potential conflicts
Increasingly promotes more independent and constructive strategies to deal with academic and interpersonal challenges, frustrations, and failures
Contribution to developing self-systems:
Scaffolds students' growing ownership of their own academic progress and development
Strategies teachers can use to foster autonomous self-regulation:
Expect all children and adults to adhere to a small number of true moral principles
Deal with transgressions using a combination of affection, dismay, and reasoning
Respond to academic struggles and failures as opportunities to learn and grow

domain, describing the needs of children whose previous experiences at home or in school did not prepare them to meet age-graded milestones, focusing especially on children whose development has been shaped by a history of early life stress. In the conclusion section, I briefly integrate information about all these developments in thinking about young children wholistically and try to explain the constraints that development places, not only on children's capacities to adapt to the demands of Kindergarten but also on the range of programs and practices that can support children as they negotiate this transition. As emphasized by many other developmentalists (see Elkind, 2015, for a historical overview), when programs (and their attendant social interactions, curricula, learning activities, routines, materials, and so on) are developmentally attuned, that is, calibrated to the developmental needs of the students they serve (Copple & Bredekamp, 2009), these programs will be more effective in helping both children and programs make progress in achieving their goals.

Social-Emotional Development and the Transition to Kindergarten

All of children's development is built on a foundation of close and caring relationships with trusted adults. Decades of work on attachment theory have demonstrated that, starting at birth, the "interpersonal matrix" provided by a caregiver is an essential ingredient for children to develop normally. In fact, the evolutionary advantage provided by caregivers is so clear that it has been incorporated into human

neurophysiology. Researchers describe neonatal neurophysiological developments as "experience expectant"—in that the healthy development of successively more complex neurobiological systems relies completely on the participation of sensitive caregivers (Gunnar, 2016). Each successive wave of development—whether social, emotional, motivational, or cognitive—is likewise profoundly shaped by the child's relationship with his or her caregivers.

During early childhood, secure relationships serve three foundational functions for children. First, they create a recurring "safety signal"—letting children know (down to the neurophysiological level) that they are physically and psychologically safe, and so they do not need to use their own resources to monitor danger and risk. As a result, when children have secure relationships with their resident adults (such as teachers and teachers' assistants in the classroom), they are calmer and less reactive and channel their energy toward more constructive engagement, exploration, focused attention, and learning from their interactions with the social and physical environment—including from their teachers and educational activities. Second, secure relationships provide a backup for children (a "secure base") when they encounter problems, obstacles, or difficulties. As a result, children with secure relationships are less likely to have "meltdowns" or temper tantrums in the face of frustration or to resort to immature ways of coping. Instead, they are more likely to turn to their caregivers when they are distressed; to accept help, reassurance, and advice from them; and to be calmed and comforted more easily. Researchers sometimes refer to this interactional process as "external emotion regulation," and it seems to be an important precursor to children's capacity to increasingly regulate their own emotions and behaviors as they move through the preschool years.

Third, secure attachments create in children what has been termed a "mutually responsive orientation," directed toward the specific adult who has cared for them in sensitive and attuned ways (Kochanska, 1997). This attitude, which begins to appear during toddlerhood, can be seen in young children's reciprocal caring and concern for the feelings and goals of their caregivers. Cumulatively, the caring interactions provided by a specific adult seem to generate in the child a willing cooperation to comply with that adult's suggestions and requests. This "good will" on the part of the child signals an openness to socialization from the caregiver, a readiness to listen, that can translate into much more uptake from the efforts (at teaching or other forms of socialization) of those adults.

Developmental Need #1: Close and Caring Relationships with Teachers

The most basic developmental task for children when they enter Kindergarten is to form a close and caring relationship with their teacher. Perhaps surprisingly, young children are extremely sensitive to cues about the intentions of adults, unconsciously appraising whether adults are "friends" or "foes," which children themselves might

express as "whether my teacher likes me." Because of its centrality to their safety, children continuously sweep their social interactions for this information and immediately begin to construct internal working models (IWM) of specific adults—as trustworthy advocates or as unreliable, critical, or uncaring social partners (Sherman, Rice, & Cassidy, 2015). These IWM also extend to children's views of themselves—their sense of relatedness or belonging in school, that is, whether they come to see themselves as welcome in the classroom and as worthy of love, appreciation, and respect from other members in the learning community (i.e., teachers and classmates; Osterman, 2000).

Of course, such relationships are not simply dispensed by teachers on the first day of school. Instead, they are built through what Bronfenbrenner called "proximal processes" (Bronfenbrenner & Morris, 2006), that is, through thousands of everyday social interactions and exchanges in the classroom (Mashburn & Pianta, 2010). Once the idea of "proximal processes" is surfaced, it becomes clear that opportunities for relationship building are everywhere. They start in the expression on the teacher's face when she sees a student for the first time in the morning, and continue with her greeting, a question about the baseball game the student was going to attend over the weekend, and the teacher silently noting that the child seems a little tired or agitated. They are continued in the physical space, with a classroom that is warm, inviting, colorful, clean, and well organized that proudly displays students' artwork and academic projects, including photos or drawings of students' family members and artifacts that reflect students' cultural and linguistic backgrounds.

One of the most crucial sources of information children use in forming their appraisals of whether adults like them or not can be found during proximal processes that focus on children's mistakes and transgressions—that is, during disciplinary encounters. When adults respond warmly and constructively and communicate that they see "a good person who made a wrong action," then the child learns that the teacher's regard for him or her is *not* conditional, it is a deeper and more permanent anchor. With this caring anchor in place, children view adults' demands for appropriate behavior, not as criticisms, but as high expectations that all children should (and can) reach, and that create feelings of mutual pride and appreciation when they are successfully accomplished. In that vein, teacher's requests for students' contributions to the functioning of the classroom, whether that be cleaning up or aiding classmates with their work, can help young children feel that they are essential to the learning community; and the warm smiles and "thank-yous" that follow these acts of kindness contribute to students' feelings of connection to their teachers and classmates.

Institutional Supports for Teachers' Professional Development

To some, it can seem like interpersonal connections with students should not be a part of a teacher's job description—instead this is the job of families. However, master teachers know that secure and trusting relationships are developmental

necessities—in fact, they will become the foundation for everything else teachers wish to accomplish over the year, including learning, motivation, and behavior management. Once teachers make this commitment, however, they face a very challenging task at the beginning of the school year: getting to know (and love) 25–30 very different children in short order. If this task becomes the first item on the educational agenda for both teacher and student, then it requires many things from educational programs. Most importantly, teachers must have time and opportunities to get to know each child as an individual and, eventually, to become acquainted with each child's extended family as well. To accomplish this task, teachers may need some training, including discussions with experienced colleagues, about how to integrate "getting to know you" activities into their academic curricula. They also need time and other institutional supports in arranging family-friendly after-school activities that will bring family members into school and help in arranging other modes of connecting with children's families (notes home, e-mail exchanges, and so on).

Differential Social-Emotional Development

When all has gone well in the lives of young children, that is, if children have a history of secure attachments with caregivers and other family members, they arrive in Kindergarten open to positive relationships and quick to trust adults who show themselves to be caring and reliable. However, if children have a history of early life stress or insecure attachments, they may arrive in Kindergarten with a very different profile. Although there is much individual variation (depending on initial temperament and a host of other factors), young children with histories of attachment problems typically show a more reactive temperamental neurophysiology that can be expressed as higher- and less-focused activity levels, greater emotional instability, lower tolerance for frustration, and quicker and stronger emotional reactions to all kinds of triggers (Zimmer-Gembeck et al., 2015). Attachment theory highlights two typical profiles (Crittenden, 1999): Young children may be somewhat "avoidant," that is, not as open to overtures from adults, wary in dealing with them, slower to express their genuine preferences and goals, and not as easily soothed, comforted, or guided by adults. Alternatively, they may be somewhat "resistant," that is, tending to be anxious, clingy, dependent, irritable, whiney, quick to meltdown, and slower to recover from stress. In general, these patterns of behavior are not very socially appealing, and children who show them do not have as positive relationship with either teachers or peers (Berlin & Cassidy, 1999).

Paradoxically, however, these young children, who are harder for teachers (and others) to like or relate to, actually have a much greater *need* for a secure relationship with their teachers. Based on their history, they typically arrive with a profile suggesting higher social and emotional vulnerability: a more nervous stress reactivity system, IWMs that depict the world as more dangerous and uncontrollable, and an impoverished repertoire of strategies for coping with even normative demands. For such children, the safety signal that is broadcast by a calm and loving secure

attachment figure downregulates their distress, helps focus attention, and amplifies children's willingness to comply. Luckily, attachments with these children are built through exactly the same proximal processes, that is, warm and caring social interactions that are sensitively attuned to the individual child's needs. It may take greater insight on the teacher's part to discern such children's needs (since they may have less experience expressing them in clear and appropriate ways), as well as more composure and patience from teachers when dealing with children's noncompliance or demands, and more internal confidence that the process will get easier over time. A secure attachment, and the improved behavior that it engenders in the child, although hard won, can also serve as a model and a bridge to improved relationships with classmates (and potential friends), who can then augment the safety signals and responsiveness provided by teachers—thereby initiating a "virtuous cycle" of positive interpersonal dynamics for vulnerable children in the classroom. Although building such relationships can be a demanding process, the payoff is well worth the effort, not only because they provide essential supports for children who would otherwise be at risk across the Kindergarten transition but also because, as hard as they are to establish, it is easier at this age than it will ever be again.

Motivational Development and the Transition to Kindergarten

A second key building block of children's development is their "intrinsic motivation," so named because all humans come with an inexhaustible supply and because—from birth—it fuels active exploration, curiosity, and an insatiable desire to explore, understand, and engage with the affordances provided by the social and physical worlds (White, 1959). In newborns, intrinsic motivation is most obvious in their focused attentiveness to incoming sensory information, like interesting sights and sounds, as well as their energetic full body efforts to get hold of toys and other novel objects (like earrings) to explore via the hand, eye, and mouth. These internally generated impulses inspire the successive development of important milestones, like head-turning, hand-eye coordination, and all the steps of locomotion. During the preschool years, young children's intrinsic motivation is most visible in their enthusiasm for learning how the world works through questions, exploration, and play, and their desire to get their hands on all manner of "play" materials, including toys, blocks, art supplies, dress-up clothes, cooking pans, outdoor equipment, tools, museum displays, books, mud puddles, sticks, techno-gadgets, and so on. Children's energy for interacting with these materials, as well as with their playmates, seems to be limitless, and its force can be fully felt by any adult who tries to interrupt them or bring them to a close.

During the transition to Kindergarten, intrinsic motivation serves three foundational functions for development. First, because it is the primary engine fostering young children's curiosity and active exploration of the environment, it is a valuable energetic resource that can fuel students' engagement and learning at school. Enthusiastic engagement is the hallmark of a "motivated" student, and teachers

rightly believe that engaged students will learn more quickly and deeply than disengaged students (Christenson, Reschly, & Wylie, 2012). So intrinsic motivation, when channeled constructively in the classroom, supports children's attention and effortful participation in academic activities, classroom routines, and learning. When their intrinsic motivation is not recruited, children have no spontaneous desire to pay attention, listen, or try hard, and so teachers must supply all the extrinsic motivation or energy for students' participation. As a result, when intrinsic motivation is not tapped, student engagement can only be purchased at a high price in terms of teacher effort and insistence.

Second, intrinsic motivation provides a durability or toughness to students' involvement in learning activities, helping them to develop stamina and stick-to-itiveness in the face of obstacles and setbacks. Without this internal desire, students can easily give up at the first sign of difficulty, and so find it hard to persist or rebound from failures. Both engagement and persistence can be seen as parts of "motivational resilience" that underlie not only academic success but also feedback to promote healthy self-appraisals—like self-confidence, efficacy, pride, and feelings of sturdiness and determination (Skinner & Pitzer, 2012). Third, intrinsic motivation for education (i.e., for learning in school) can be the first step in a lifelong love affair with learning. Such burgeoning academic enthusiasms launch the kinds of independent exploration and searches for more knowledge (via informal channels, like books, documentaries, extracurricular activities, museums, and hobbies) that help children discover their own abiding interests and passions. Over time, these pursuits will support students' growing ownership of their own academic and vocational progress.

Developmental Need #2: Intrinsic Motivation and Love of Learning

The second developmental task for children when they enter Kindergarten is to channel their intrinsic motivation for learning into educational activities in school. Research on motivational development suggests that this task is harder to accomplish than parents and teachers might suspect. In general, students' motivation, engagement, and enjoyment of school drop significantly across the transition to Kindergarten; these declines are more pronounced for children who struggle academically or socially and for children from ethnic minority, immigrant, and low socioeconomic status backgrounds (Wigfield et al., 2015). A framework, called "stage-environment fit," has proven useful in research on motivational development, where these declines (and similar ones across the transitions to middle and high school) have been the target of intense empirical and intervention efforts over the past several decades (Eccles et al., 1993). This framework argues that losses in motivation and engagement are the result of a mismatch between children's changing developmental needs and the structures and opportunities provided by schools.

Stage-environment fit (SEF) suggests that, over the transition to Kindergarten, one factor that undermines students' motivation for school is the environmental shift from a "play" curriculum that capitalizes on children's intrinsic motivations to an academic curriculum that often requires participation in educational activities that are not as intrinsically interesting. Hence, to meet students' developmental needs (and to prevent losses that only seem to multiply over subsequent transitions), educational programs should organize their curricula around activities that spark young children's internal desires to get involved. Luckily, there are literally thousands of such activities, and they are both well-known and well-documented (e.g., Dochy, Segers, Van den Bossche, & Gijbels, 2003; Hmelo-Silver, 2004; Zhang, Parker, Eberhardt, & Passalacqua, 2011). The core to all these activities is that they involve purposeful active "doing"—children's goal-directed interactions with interesting learning materials, often connected to real-world purposes, like running a store or tea house, gardening, providing information to scientists, completing community projects, creating museum exhibitions, or writing songs or books. This kind of active authentic learning can be contrasted with educational processes that involve sitting still and listening or working on highly artificial seemingly arbitrary activities, like worksheets. A benefit of organizing classroom activities around real-world projects is that teachers have the flexibility to build lessons around topics (like sustainability, space travel, the Iditarod, or musicals) that they themselves find intrinsically interesting. In addition to adding to their own enjoyment, teachers' enthusiasm about the topic conveys to students that learning is valuable and exciting.

Institutional Supports for Teachers Professional Development

To some, it can seem like school is not supposed to resemble preschool or to be "fun." But experienced teachers know that intrinsic motivation is their best friend, undergirding the kinds of student enthusiasm, engagement, and persistence in educational activities, complete with eager questions and lively commentary, that remind teachers why they went into the profession in the first place. A valuable side effect of high levels of student intrinsic motivation and engagement is that teachers can spend more time interacting with their students around the subject matter. Because teachers are required to spend less time reminding or prodding students to pay attention or do their work, less of everyone's energy is wasted on disciplinary encounters.

At the same time, however, if nurturing intrinsic motivation becomes a top priority in educational programs, then teachers will need additional training and support. It is easy to identify activities that young children love to do; it is harder to find or invent intrinsically motivating activities through which children will systematically learn the material targeted by curriculum goals. Teachers need time and support to tailor project-based activities to serve both their current learning goals and their own students' motivation. They may also need some additional professional development

in how to run active student-centered classrooms. In teacher-centered classrooms, teachers focus primarily on what they themselves are doing—their presentations, demonstrations, displays, or explanations—and they can feel satisfied if they get through their entire lesson plan. In student-centered classrooms, in contrast, teachers focus on what their *children* are doing, maximizing each student's engagement with the material. Teachers have an important and challenging role to play during active learning—part stage manager, part coach, part participant, and part task master; and they can feel satisfied if they have the flexibility to reinvent the lesson plan over and over, simultaneously keeping students focused and engaged while still meeting curricular learning goals.

Teachers could also benefit from opportunities to build out a more differentiated repertoire of strategies for motivating students, recognizing that many of the most common motivational tactics inadvertently rely on extrinsic motivators, like rewards, punishments, social comparison, or competition, which have the potential to undermine intrinsic goals (Deci, Koestner, & Ryan, 1999). Students' own motivation can be awakened and channeled through alternative means, such as puzzles or problems to be solved, mystery and wonder, stories and characters, and connections to a larger community purpose or set of values—like helping others. Perhaps surprisingly, it turns out that motivation can also be bolstered simply by acknowledging that some tasks (like practice or clean up) are not intrinsically fun, but pointing out that they can be made more fun on purpose by, for example, charting the progress practice produces, reflecting on personal improvements, thinking about the fun things we will do when we are done, expressing pride in our ability to do our parts in clean up, or simply singing our way through boring activities, like memorization. This explicit and joint management of motivation also begins to give young children the tools they will need to (eventually) intentionally guide and motivate their own actions in service of their own goals.

Differential Motivational Development

When all goes well, young children arrive in Kindergarten with their intrinsic motivation still bubbling on the surface, and when they are presented with the opportunity to participate in a set of fun learning activities, they do so with controlled gusto, engaging fully but still listening to the teacher, following instructions, and respecting classroom rules. However, some children, perhaps with histories of relative neglect, may not have been provided with stimulating play materials or opportunities to participate in structured games, exploration, or other open-ended learning tasks. Such children may initially respond to intrinsically motivating activities either with passivity and confusion or as if they were permission for a free-for-all. These kinds of reactions can easily lead teachers to conclude that some children are not ready for the freedom of intrinsically motivating activities and it would be better for these students to be confined or constrained until they learn how to manage their own behavior or respond better to teacher's efforts to manage them. Such caution

may seem especially apposite for students who have regulatory difficulties, based on immaturity or lack of experience.

It often surprises teachers to learn that, even in children with regulatory problems, the intrinsic motivation channel of regulation is typically intact. This explains why young children with regulation issues can show intense engagement and determination—to continue doing the activities of their choice. It is typically the *external* regulatory channel that is impaired, and one of the first steps in exercising this channel is in service of intrinsically motivated activities. For example, children with poor fine motor coordination will work hard to operate a piece of chalk to draw a dragon on the sidewalk, in a way they will not if they are asked to operate a pencil to write their names on a worksheet. Or children will control their gross motor behavior to hop on a number line laid out in the gym, in a way they cannot if asked to move their fingers on a number line on a piece of paper.

These episodes, fueled by intrinsic motivation, can scaffold exactly the kinds of repeated practice that strengthen external regulatory "muscles"—without instilling in children the feeling that school is boring, demanding, or hard, a place they wish to avoid if at all possible. When teachers have the eyes to see children's experiences through the lens of "intrinsic motivation," they come to realize that no child is "unmotivated," even ones who appear passive or sullen or disruptive. Instead, these children have not yet found the topics or activities fascinating enough to ignite their genuine personal interests and passions. Teachers are often surprised to see "unmotivated" students passionately engaging in after-school activities like sports, music, or commercial ventures such as Pokémon or video games. If teachers remember that it is the nature of all humans to show a deep and abiding curiosity and engagement in learning activities, then they will begin to see disaffected students as messages to schools about the mismatch between students' needs and the kinds of learning opportunities Kindergarten has made available to them. The opportunity to open a child's eyes to the love of learning, especially a child who otherwise could be destined to dislike or even hate school, is a gift to both teacher and child.

Cognitive Development and the Transition to Kindergarten

A third key building block of students' learning and development across the transition to Kindergarten is the elaboration of explicit cognitive representational systems that underlie language, thought, and problem-solving. These systems, which are first detectable as implicit appraisals at about 3 months of age, are designed to "take notes" about infants' first-person lived experiences, that is, to reflectively capture their internal and external experience. Building on infants' powerful inductive capacities, these appraisals are initially organized as generalized expectancies that begin to store information about interactions with the social and physical contexts, and so start to guide subsequent action (Thompson, 2015). They are transformed by successive developments into internal working models, symbolic communication (e.g., pointing), explicit appraisal systems, spoken or signed language, and

internalized speech or thought. These eventually comprise the "words" that preschool teachers and parents are always asking young children to use when they are upset or frustrated.

During early childhood, cognitive representational systems serve at least three foundational functions for development—of the self and in the social and cognitive domains. First, they help young children begin to make sense of their internal experiences—emotional, motivational, social, and bodily sensations—so that these can be identified, differentiated, labeled, and noted. For example, research on emotion regulation shows that an early and necessary step in children's capacity to understand, control, and redirect their emotions is the acquisition of a differentiated vocabulary of emotional terms that maps accurately onto their own internal experience of emotions (Thompson, 2015). Such representational systems seem to reach back down into children's interoceptive information to give them a handle on the meaning of their own psychological and physiological experiences. To function well, one end of this handle needs to be well-integrated with children's own authentic experiences, so that the cognitive representational system, even if rudimentary, still comprises an accurate map that can provide good information to guide subsequent actions. The other end of the handle needs to be well-aligned with culturally scripted concepts and terms that depict this experience. Such elaborated representations allow children to look at their internal life from a third-person perspective, so that it can be acted upon or modified intentionally. Without these well-developed representations, children's automatic impulses continue to direct their actions below the level of conscious awareness.

Second, these cognitive representational systems and the communication tools they support (e.g., language) pave the way for the emergence of important social capacities. They allow adults to participate with children in examining and understanding their feelings, thoughts, goals, and reactions to the social and physical world. For example, research on young children's cooperation with adult requests suggests that smooth compliance (also called external regulation) relies on children's shared language competence (Calkins & Hill, 2007). Just as representational systems are beginning to create a rudimentary steering mechanism that can be operated by young children's increasingly agentic selves, so too do they create a social or external channel through which others (i.e., adults and peers) can likewise begin to guide young children's thoughts, feelings, motivations, and actions. The development of representational systems are also essential to the emergence of young children's cognitive and affective "theory of mind," which refers to their ability to take the perspective of others, and infer their invisible thoughts, intentions, and desires (Wellman, Fang, & Peterson, 2011). Perspective taking in turn supports caring and prosocial action, such as helping and sharing.

Third, representational capacities are primary building blocks for important cognitive advances during early childhood, focused on the development of problem-solving and executive functions (EF). Cognitive representations expand the reach and flexibility of children's problem-solving by adding a layer on top of direct action, which allows them to mentally try out a series of potential solutions, one after the other, without actually expending energy or incurring the costs of failed

attempts. Research on the development of EF suggests that representational systems are essential elements of self-regulation, in that they comprise the system that will suggest (and later insist) on redirecting impulsive action in situations where intrinsic motives and extrinsic goals (e.g., adult requests or classroom rules) collide. Representations participate in EF first in their capacity to represent rules governing behavior at about age 3, and later as both the output and the recipient of "reflection"—in which the information extracted from interactions with cognitive tasks is fed back into representation systems for further consideration (Bunge & Zelazo, 2006). Reflection, through such "iterative reprocessing," is thought to be central in the formulation and maintenance of more complex representations of hierarchical goal structures in working memory (Zelazo, 2015). Hence, representational and reflective systems comprise a channel for learning, that is, for pulling information and lessons out of social, educational, and recreational activities, and then acting on it intentionally. As can be imagined, cognitive representational systems act as an integrative two-way bridge—between internal and psychological experiences, on the one hand, and communicative and social experiences, on the other.

Developmental Need #3: Reflection, Communication, and Problem-Solving

Given the complexity and importance of representational systems to action and thought, it turns out that the interpersonal supports required for their development are relatively straightforward: Young children need opportunities to reflect on and express their internal feelings and thoughts and to reflect on and listen to those of others. The most basic mechanisms of development take place in the thousands of proximal processes we call "conversations," which are actually much more complex than adults may realize (Applebee, 1996). They require children to reflect on their inner states and to articulate them in language that is understandable to listeners and then to focus their attention on the communications of their conversation partner—both verbal and nonverbal—in order to take this message into consideration when formulating a reply. These conversational bouts often continue through dozens of exchanges, and when they go well, they can correct mix-ups, produce a common understanding of the problem to be solved, and suggest a coordinated plan of action.

The kinds of educational activities that build reflection and representational capacities are most obvious in language arts—activities like reading and writing, but they can also be nurtured through other activities that allow young children to express their thoughts and feelings, such as through music, dance, or writing stories, poems, plays, and songs. They can be elaborated in basic activities, like reading or watching movies, when children are asked to imagine what one of the characters is thinking or feeling. As pointed out by proponents of "literacy across the curriculum" (e.g., Vacca, Vacca, & Mraz, 2005), representational capacities can be exercised across all aspects of the curriculum—as students are asked to reflect on their

expectations for what will happen next in a science experiment or to explain how they got a particular answer on a math problem. Reflection is cultivated any time children are asked to predict an outcome, articulate an expectation, provide a justification, or explain their own or others' thinking or behaviors. In fact, when children put their heads together to try to solve any problem presented to them by their teacher, be it science, social studies, math, or language arts, they are required to get out their conversational and listening skills to exchange ideas and options, thus practicing reflection.

Some of the most difficult and productive exchanges are also likely to be "extracurricular," when children are distressed or during disciplinary encounters. It is particularly challenging for children to access their internal experiences and representational capacities when they are frustrated or upset. However, such episodes create a zone of proximal development, during which young children, with the help of their adults, can learn more about their own internal experiences, others' needs, and classroom rules. If carried out with sensitivity, they can allow children to exercise their burgeoning capacities to explain themselves. It turns out that one key to the success of these interactions in promoting representational development is the adult's capacity to listen and to articulate the child's perspective—sometimes better than the child is currently able to do. Teachers are required to "talk with" children, rather than "talk at" them, if these conversational exchanges are going to be opportunities for children to build their cognitive representational capacities.

Support for Teachers' Professional Development

In thinking about the kinds of classrooms created by a curriculum full of representational and reflective learning activities, many adults can think of only one descriptor: "loud." And indeed, more conventional classroom organizations, in which the teacher talks while students listen or in which one student talks while the rest of the class listens, are likely to appear quieter and more orderly. However, they are also empty of the vigorous exchanges—the contesting of perspectives, reasons, and possibilities—through which children develop durable representational systems. As a result, many teachers will likely need some supplementary training in how to create and direct students' conversations so that they are productive, both in terms of supporting the development of cognitive representations and facilitating explicit learning of target curriculum content.

Since it is also clear that teachers themselves cannot carry on 25 individual conversations at the same time, many of these development-enhancing social exchanges will involve student-to-student dialogs or discussions. In order to keep these exchanges academically productive, students will need to learn how to talk, listen, reflect on, and record their discussions, and so teachers may need additional training in how to help children acquire these reflective skills and habits. Luckily, these are many of the same skills that teachers can use when they supervise the kinds of intrinsically motivating learning activities described previously. In fact, working

with peers and talking about what they are learning is a form of engagement that is naturally attractive to young children, although it does require scaffolding from adults to keep it from devolving into purely social exchanges no longer focused on the relevant subject matter.

Differential Cognitive Development

When all goes well, young children arrive in Kindergarten with rich and elaborated reflection, representational, and communication systems that allow them to easily and calmly express their thoughts and feelings, even when they are upset, to listen to both adults and peers, and to quickly incorporate new information into these systems during discussions and learning activities. However, many children, especially those from households that are low on adult-child conversations, have missed out on the experiences needed to support the development of these systems. To put these differences in perspective, the average child from a low SES household by the age of 3 years hears about 30 million fewer words than the same age child raised in a medium or high SES household (Suskind, Suskind, & Lewinter-Suskind, 2015). By the same token, many English language learners, although rich in the representational systems of their native languages, are still in the process of building out corresponding systems in English (which will ultimately benefit from an enriched bilingual system).

As a result, some children start Kindergarten with underdeveloped representational and language systems that can easily be overwhelmed by emotion, conflict, or complex cognitive demands. From a teacher's perspective, these children (many of whom are boys—who typically lag behind girls in the development of representational skills and language) can appear to be "not very verbal," in that that they are not particularly responsive to adults' verbal requests and they do not seem to seek out or respond to conversational overtures from either adults or peers. Such children seem to repel casual conversation which means that, left to their own devices, they will never have the opportunity to develop these skills. If teachers allow that to happen, these initially "nonverbal" children will continue to be at an academic disadvantage, not only in reading and other language arts but across the curriculum, since listening, comprehension, and reading are gateways to learning in all subject areas.

Hence, the children who seem most shy, distant, and uninterested in verbal exchanges may be most in need of them for the development of their cognitive representational capacities. First steps may include a "narrative" approach, in which caring adults or peers begin to dictate children's actions and experiences as they unfold in real time—which mimics the explicit "note-taking" that young children naturally embark upon when they grow up in language-rich environments. Teachers will need to be thoughtful and vigilant in working with children currently low in verbal skills, since they are also likely to lag behind in self-regulation, to become more easily frustrated by setbacks and peer conflicts, and to be less responsive to teachers' requests for attention, engagement, or rule following. In emotional

situations, which normatively make it harder for even articulate young children to explain their viewpoints, such students may seem to "disappear," in that the verbal handle that adults rely on to exchange ideas with children is no longer accessible. Sensitive teachers will fall back on the attachment system as a source of comforting and calming (using presence or touch) and wait for emotional outbursts to pass before trying to engage students in conversations about what is happening, knowing that these will be more productive once the child has calmed enough to regain access to his or her shaky cognitive representational system. Helping previously silent children develop their own genuine voices, which they can then use to express their true preferences, to build relationships with peers and adults, and to wrestle with the concepts and ideas embedded in the Kindergarten curriculum, can be a greatly rewarding experience for teachers—who rightly feel that they have helped a child who was trapped in the dark of their implicit experience step outside into the light, connect, and blossom.

Self-Regulatory Development and the Transition to Kindergarten

The fourth major building block of development and learning during the transition to Kindergarten rests on young children's emergent ability for self-regulation, that is, their capacity to intentionally guide their own actions, to modulate their emotional expression and experience, and to begin to use a set of internalized moral principles to autonomously resolve conflicts between their own goals and those of other people and rule systems. From birth, newborns are active and goal-directed beings, who express and pursue their own preferences and who steer their motor behaviors in pursuit of their goals—crying when hungry or wet, fretting when uncomfortable, looking away from worrisome sights, and reaching for desired objects. However, these actions, although goal-directed, are guided by bottom-up implicit emotional motivational systems that operate below conscious awareness. These can be colloquially referred to as "yum" and "yuck" systems, in that infants and toddlers approach and pursue objects and interactions that are intrinsically attractive ("yum") and they reject and avoid those that are intrinsically repulsive ("yuck"). Starting at about age two, however, children become able to use their emergent representational systems to explicitly represent and talk about those goals, using words such as "I want," "me do it," and the ever popular "No!"

When these cognitive representational systems are strengthened through exercise and practice, an amazing potential is realized: Children can use these systems to cognitively represent goals that are *not* their own intrinsic "yums" and "yucks," but instead are *extrinsic* goals, typically brought to them by their caregivers in the form of requests or rules. Initially, the only motivation young children have to pursue these extrinsic goals, called "don't regulation," is when children are asked to stop showing actions that they spontaneously want to do (like pulling all the tissues

out of a Kleenex box) and "do regulation" when children are asked to show behaviors for which no spontaneous intrinsic motivation exists (like getting ready for bed) (Kochanska, Coy, & Murray, 2001). As described previously by the notion of a mutually responsive orientation, young children's willingness to cooperate with these extrinsic goals initially springs from their attachments to specific adults: Children reciprocally care about these adults' preferences and feelings and want to please them, so they willingly cooperate with their requests and limit setting efforts (Kochanska, 1997).

However, as children reach preschool age, the center of gravity for such compliance shifts—from one based on interpersonal attachments to one based on the intrapersonal agentic self (Kochanska, Koenig, Barry, Kim, & Yoon, 2010). Largely through modeling and conversations with caregivers about "our way" of dealing with people, objects, and rules, young children begin the process of representing and then internalizing true moral principles—such as treating people with kindness and respect, doing our parts to take care of our indoor and outdoor homes, cleaning up after ourselves, apologizing for and repairing our transgressions and mistakes, and so on. During this age, these principles become the explicit topic of repeated interactions, as adults mediate peer/sibling conflicts and begin systematically placing demands for increasingly mature behavior on children, explaining the reasons for these demands, and following through to make sure that children consistently follow these principles. Over time and with initial supervision from watchful adults, these moral rules become the fallbacks or defaults that preschool age children begin to use autonomously to guide their own behavior and to negotiate disagreements with others.

For young children, emerging self-regulatory capacities serve three foundational functions in school. First, they allow children to "behave," that is, to guide their own behaviors and emotional expressions so they comport with teachers' requests for attention and engagement and classroom and school rules (Ursache, Blair, & Raver, 2012). Second, they allow children to manage their relationships with peers, so that they interact in socially appropriate ways, and use prosocial means to resolve potential conflicts (Bronson, 2000). Third, they presage a shift in the development of children's coping, so that they can increasingly use more independent and constructive strategies to deal with academic and interpersonal challenges, frustrations, and failures and to rely less and less on maladaptive or immature ways of coping (Skinner & Zimmer-Gembeck, 2016).

Developmental Need #4: Self-Regulation, Coping, and an Internal Moral Compass

The development of autonomous self-regulation is considered by many developmentalists to be the signature task of the preschool years (Erikson, 1959/1994), and as can be imagined, its successful accomplishment builds on underlying advances in

the social, motivational, and cognitive representational capacities described in previous sections. For example, intrinsic motivational systems provide the bottom-up impulses ("yum" and "yuck") that young children must learn to regulate, meaning that children who are more impulsive or reactive end up with stronger behavioral or emotional urges to modulate. At the same time, social developments also play a role: When children grow up in social worlds governed by caregivers who are deeply concerned with their welfare, practices of kindness and caring become ingrained habits, so that they become the defaults for young children's bottom-up impulses, even in the face of frustration or disagreements. Such sensitive caregiving also fosters secure attachments, which provide the initial motivation to comply with requests for which children have no spontaneous intrinsic motivation. And finally, as discussed previously, cognitive representational systems also play a central role: These systems, which mentally store information about extrinsic goals, have the unenviable job of creating intentions that are strong enough to override intrinsically motivated impulses. The use of regulatory muscles provided by nascent representational systems is initially very effortful, which is apparent in very young children's bumpy attempts at compliance (Kopp & Neufeld, 2003). However, as these principles are internalized and integrated with an increasingly agentic self across the 5–7-year shift, children's intentions and regulations become more autonomous and so require less directed attention and energy to implement.

The role of adults, both family members and teachers, in scaffolding the development of autonomous self-regulation is a complex and challenging "Goldilocks" task, in which it is easy for support to be "too hot" or "too cold." On the one hand, it is possible for adults to provide too little support—in essence to be permissive or indulgent, by not asking young children to live up to cultural and family values. In these circumstances, adults do not consistently express expectations for mature and caring behavior, nor do they reliably follow through with their requests. On the other hand, it is possible for adults to demand excessive compliance with arbitrary rules that are not age appropriate—in essence to be authoritarian or dictatorial. In these situations, adults have a large catalog of idiosyncratic rules that they rigidly insist children obey at all times. It turns out that for children to autonomously self-regulate their own behavior and emotions, they have to genuinely internalize moral principles and accept them as their own. If children are not asked to step up to and act on moral guidelines, they never have a chance to internalize them. However, if they are overly controlled though external forces, like insistence on obedience, then children do not take on these rules as their own—instead they internalize the fear, guilt, and shame used to control their behavior and may abandon these rules as soon as external controls are removed.

To successfully scaffold the progress of these highly internal activities, adults must find a balance that is "just right." This includes clear expectations for adherence to an extremely small number of genuine moral principles (e.g., the Golden rule, or kindness, respect, honesty, accountability), which are not only expected of all children but are also modeled by all adults. Many teachers display these rules in the classroom as "Our Class Values." Helping children consistently adhere to these expectations may initially require a certain amount of careful monitoring by adults,

but this surveillance communicates to children that adults take these values seriously and expect adherence at all times. Especially important are disciplinary encounters occasioned by children's inevitable transgressions (Hoffman, 1994). Research suggests that the most effective strategy for supporting internalization is a Goldilocks message from adults that includes warmth and caring combined with emotional dismay that emphasizes the severity of the transgression (e.g., hitting another child), while also providing a clear rationale for the principle (e.g., "that hurts his body") sometimes delivered by the victim himself (e.g., "Paulo, can you please tell Janine how that made you feel?"). These three elements: affection (to indicate that the relationship is not at stake), dismay (to communicate the gravity of the action), and rationale (to provide a clear representation of the underlying principle), along with consistent modeling of desired actions by adults, seem to optimize children's uptake of these principles and provide a solid foundation for an increasingly strong internal moral compass (Hoffman, 1994).

An important set of academic experiences that also provide good opportunities for the development of self-regulatory capacities revolve around children's academic struggles and failures (Dweck, 2006). Academic difficulties, which adults sometimes attempt to minimize or brush over, can be used intentionally to build out on young children's appraisals of the meaning of failure and to boost their developing coping capacities. When teachers openly identify their own and their students' confusions and setbacks during engagement with learning activities, they challenge the default cultural lens of low performance as a marker of lack of ability and an occasion for shame and giving up. Instead, even young children can begin to appraise "failures" as temporary setbacks that contain good information about how to clarify thinking and to improve learning strategies. These experiences become joint opportunities for acknowledging the distress and bewilderment inherent in academic struggles and talking about reappraisals that reorient learners to opportunities for productive effort and acquisition of strategies for self-regulated learning.

Support for Teachers' Professional Development

To some, it may seem that self-regulation, moral development, and coping are not the concern of the educational system; instead they are better left to families. Master teachers know, however, that adherence to these principles creates a classroom climate in which children feel psychologically, emotionally, and physically safe, whether they are succeeding or failing academically, thus supporting all students' learning. When children do not feel safe, mental resources are dedicated to threat detection and anxiety which could otherwise be utilized for engagement and learning. Research on social-emotional learning (SEL) examines the effects of classroom curricula that integrate activities and exercises to strengthen children's behavioral, emotional, and prosocial self-regulation and shows that these educational programs confer a host of benefits, including a more positive classroom climate, improved

peer relationships, and better learning (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Zins & Elias, 2007).

Teachers may need some additional professional training in how to implement these kinds of SEL programs and how to integrate them into their own curricular goals for students' acquisition of specific subject matter (Jennings & Greenberg, 2009). In fact, these kinds of programs may work best when they are adopted, not just in individual classrooms but by the whole school. This allows prosocial governing principles to be highlighted in word and deed across all the contexts a child encounters during the school day—at recess, lunch, gym and music class, in the hallways and restrooms, and on the bus or walk home. It also allows these principles to be instantiated at higher levels through school-sponsored service learning, community outreach, and "random acts of kindness." These all-school activities communicate powerfully to students the importance teachers, principals, and staff place on the values espoused at school. Fortunately, participation in community-based, purpose-driven activities (like gardens that provide food for other students and the local food bank) are also rich sources of intrinsic motivation, engagement, and learning about the subject matter covered in Kindergarten curricula. When whole schools adopt the SEL programs that are right for them, then principals and colleagues can provide support for teachers as they bring these activities into their individual classrooms and integrate them with the specific learning goals they have for their students.

Differential Self-Regulatory Development

When all goes well, children arrive in Kindergarten with ingrained habits of kindness and fair play, bolstered by a set of principles about how people should treat each other that are well-integrated with their own views of themselves and the social world. However, when children are raised in stressful environments, especially ones that contain harsh and inconsistent parenting (Belsky, Schlomer, & Ellis, 2012), they have not had opportunities to see these principles modeled or to internalize their value (Kochanska, Philibert, & Barry, 2009). They may instead arrive with only immature tools, like aggression, whining, sulking, or tantrums, with which to negotiate interpersonal disagreements. At the very least, they may be at a disadvantage in terms of developing the regulatory skills they will need to successfully guide their own behavior and emotions, especially when they are frustrated or upset. Unfortunately, young children with a history of stressful early life experiences are also likely to be more easily triggered by everyday frustrations or demands, such as requests for attention or compliance—demands that would not normatively set off children of Kindergarten age. This mixture of high reactivity and low regulation can converge to produce the kinds of immature, impulsive, and out-of-control behavior in a high-demand context like Kindergarten that can easily lead to the reputation of "troublemaker."

Since the development of regulation, as mentioned previously, is built on well-functioning attachment and cognitive representational systems, both of which can also be impaired by stressful early life experiences (Cicchetti, 2016), teachers may need to reach pretty far upstream developmentally to help such students get back on track toward competent behavioral and emotional regulation and subsequent internalization of classroom values and norms. The development of trusting relationships and representational (conversational) skills will give teachers the handles they need to work with children on their willingness and ability to live up to "our way" of treating each other. In that regard, it is clear that the kinds of discipline children labeled as "troublemakers" typically receive in school, such as cold or controlling teacher behavior or removal from the classroom (or their opposites, such as ignoring or tolerating misbehaviors because children have a history of trauma), are all developmental dead ends when it comes to self-regulation and constructing an internal moral compass. Luckily, the same research that has documented the ways in which stressful early life events impair the neurophysiological and psychological systems children use to regulate emotional and behavioral reactivity has also documented the continued plasticity of these systems (Lupien, McEwen, Gunnar, & Heim, 2009). Even for children as old as preschool and Kindergarten, many neurophysiological systems seem to remain open, in that they can be at least partially rewired and repaired by prolonged experiences in "enriched" environments, defined as warm, close, and caring social contexts full of opportunities for challenging and interesting exploratory activities and play (Blair & Raver, 2014; Crofton, Zhang, & Green, 2015). Fortunately, these are exactly the same kinds of Kindergarten environments in which all children flourish.

Conclusion: Teaching, Learning, and the Development of the Whole Child

The transition to Kindergarten demands a great deal of a child's development, but a child's healthy development also demands a great deal of the transition to Kindergarten. Children's developmental needs start long before the 5–7-year shift, of course, and the notion of a child's "readiness" for this transition crafts a message to parents and pre-Kindergarten programs about what children will need in the years prior in order to develop the social, motivational, cognitive, and self-regulatory habits and skills that will prepare them to successfully navigate this transition. In fact, the challenges presented by the transition to Kindergarten actually suggest that children will need to be a little bit *more* than ready—the transition's stresses will call upon children's reserves, that is, their stress resistance and resilience (Fleshner, Maier, Lyons, & Raskind, 2011) as well as their coping capacities, to constructively negotiate the challenges and setbacks they will normatively encounter.

As it turns out, Kindergarten teachers and educational programs have no choice but to educate the whole child. Although researchers can focus their studies on a

particular facet of children's development, such as their emotion regulation or motor skills, teachers do not have that luxury. Whether they like it or not, children's attachments, motivation, personality, and past history all walk through the door with them the first time they enter the Kindergarten classroom. If teachers overlook children's "nonacademic" attributes, such as their social-emotional lives or intrinsic interests and passions, because they have not been trained to gauge or fulfill young children's basic developmental needs, these facets may impede teachers in their quest to help children acquire the knowledge and skills they require to successfully complete Kindergarten. Just like in the 1960s, when critics argued that it was not the job of the educational system to feed children breakfast or otherwise provide for their nutritional needs, it is tempting to imagine that when educational programs ignore children's developmental needs, these decisions will not take their toll on both students and teachers.

Positive Synergy Among Children's Developmental Needs

However, master teachers realize that these same needs, for connection, passionate involvement in interesting tasks, a desire for self-expression, and autonomy, can become powerful allies during the tasks of teaching and learning. In fact, these needs are themselves intertwined, and so fulfilling any one has the potential to enhance all of the others. For example, the same kinds of close and trusting relationships with teachers that meet children's social and emotional needs for security and safety also give students a leg up in their regulatory development, by creating a mutually responsive orientation. The same kinds of learning activities that allow students to channel their intrinsic motivation into academic work also scaffold the development of extrinsic motivation (and so promote self-regulation) and reduce the need for disciplinary interactions (which further bolsters caring relationships). The kinds of conversations and exchanges about children's internal states and thinking processes that augment cognitive representational skills and problem-solving also turn out to cement relationships as well as strengthen children's self-regulatory muscles. And children's internalization of moral principles is promoted by modeling the same kinds of caring and fair behavior that fortifies secure attachments and also opens up room for conversations that expand representational models of alternative strategies for solving problems.

And, interestingly enough, studies examining the development of social, motivational, cognitive, and self-regulatory capacities all highlight the same set of social interactions as a site of particular importance for socialization efforts: those involving children's mistakes, outbursts, and transgressions, when children encounter obstacles and failures, and their emotions are running high. Depending on the way in which teachers (and parents) respond to them, these "problems" may offer opportunities for growth. When teachers respond with warmth and perspective taking, they can strengthen attachments and encourage students to come to teachers when they need help or comfort. When teachers discuss these incidents with their students, they build cognitive

representations of a differentiated vocabulary for examining stressful situations, emotions, and problem-solving. When teachers hold students accountable, these gentle but firm demands create a zone of proximal development in which students have a chance to live up to their values. When teachers and students work together to jointly deal with challenges and setbacks constructively, these are the very interactions through which children are most likely to exercise and build their regulatory muscles, coping resources, motivational resilience, and stress resistance.

If teachers ever have to make a decision about which of the developmental needs to work on first, research suggests they would be well-advised to prioritize the needs in the same order in which they are presented in this chapter: starting with social-emotional needs because secure attachments serve as a foundation for all other efforts, then preserving intrinsic motivation to procure students' engagement and energy, then fostering cognitive representational and problem-solving skills which can be used as an external handle to guide students, and then demanding appropriate self-regulation according to moral principles. Luckily, the positive manifold among these needs suggests that any trade-offs are probably only situation-specific and temporary. Even for students with stress-filled early lives, teachers are likely to have more success in rerouting their pathways toward healthier development if they find ways to *simultaneously* meet all their needs in the classroom. Clearly, attachment is the first key to unlock students' potential, but young children are easier to love if they engage enthusiastically in their academic tasks, treat classmates with respect, and follow classroom rules. By meeting all students' needs simultaneously, teachers also build a classroom climate and peer culture in which students and their classmates can become positive forces in each other's learning and development (Kindermann, 2016).

Focus on Teachers' Professional Development

If children's developmental needs can be met by their Kindergarten experiences, whether through interactions with teachers, peers, academic activities, or creative arts, service, and physical activities, then students will blossom. Not only are these developments valuable to children in their own right, but they also underlie young children's readiness, willingness, and ability to learn. When children's developmental needs are met, they are more likely to show the enthusiastic engagement, valuing of school, and love of learning that both developmentalists and educators rightly regard as essential to their academic and personal advancement. Together, the nurturing context collectively created by these supports helps children emerge from the challenges of the Kindergarten transition even stronger and with optimism that the turning point represented by the 5–7-year shift likely signals an upward trajectory for their future development.

In order to meet the challenges of providing for the developmental needs of their students, however, teachers will need development supports of their own, provided by their preservice programs (Darling-Hammond, 2012) and then by their colleagues and

school and district leaders (Chang, 2009). Teachers, just like children, need certain essential experiences to thrive. They need close, caring, and trusting relationships with their peers and principals—relationships they can count on even when they fail or make mistakes. They need opportunities to express their intrinsic motivations in their everyday work—exploring their interests and passions fully. They need whole school contexts that are aligned with shared core human values, and not hemmed in by arbitrary narrow-minded bureaucratic rules. They need authentic opportunities for professional development that are designed to help them learn more deeply about the important work they are doing and about themselves as teachers. Teachers especially need time and support as they work with students who start at a disadvantage and are not really ready to meet the normative demands of Kindergarten. Teachers need to know that school leaders have their back and that they themselves possess the skills and resources needed to become the bridge between these children's often stressful pasts and their brighter futures. These supports from the larger system, in which teachers' development and learning are cared for in the same ways that we are asking teachers to care for their students, should create contexts in which both teachers and students can reach their full developmental potential.

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Consistency in Children's Classroom Experiences and Implications for Early Childhood Development

Laura L. Brock, Timothy W. Curby, and Amy L. Cannell-Cordier

Abstract In order to promote positive developmental trajectories, children need predictable teacher-child social interactions that are consistently sensitive and responsive. In environments where children are surrounded by warm, supportive, nurturing adults whose behaviors, actions, and emotions are relatively consistent, children cultivate the confidence to explore their surroundings in ways that facilitate development across multiple domains. In this chapter, we emphasize the within-day consistency in children's experience of classroom emotional support and summarize the research linking emotional support consistency to children's behavioral and academic gains from preschool through elementary grades. We further explore teacher-child relationships as mediators and child temperament and self-regulation as moderators of child outcomes. We offer two established theoretical frameworks for understanding the role of teacher's emotional support consistency on child outcomes: (a) Attachment theory suggests the provision of consistently warm and supportive caregiving facilitates an environment where children more readily explore and learn; (b) resource depletion theory suggests that children who devote attentional resources to monitor a changing or unpredictable social environment may not have sufficient cognitive resources available to dedicate toward learning tasks. We conclude with consistency measurement considerations and an invitation to conceptualize consistency in multiple ways, offering family mobility patterns as an example.

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Consistency in Children's Classroom Experiences and Implications for Early Childhood Development

In order to promote positive developmental trajectories, children need predictable caregiving that is consistently sensitive and responsive (Ainsworth, 1969). In environments where children are surrounded by warm, supportive, nurturing adults whose behaviors, actions, and emotions are relatively consistent, children cultivate the confidence to explore their surroundings in ways that facilitate development across multiple domains (Bronfenbrenner & Morris, 2006). Caregiving environments can include both the home and early childhood classroom environments. This chapter summarizes a growing body of literature in early childhood education research that examines the importance of consistency of experiences within early childhood classroom settings for children's development by (1) providing a theoretical rationale for the role of consistent experiences in promoting children's development; (2) reviewing prior research on consistency, which suggests that children with teachers who are more consistent in the quality of their social interactions learn more and exhibit more social competence; and (3) presenting new empirical research that illustrates the important role of teacher consistency in developing children's self-regulatory capacity and that highlights unique challenges for providing consistency in under-resourced communities with high rates of residential mobility. Finally, the discussion section concludes with an overview of issues related to the measurement of consistency of experiences within classrooms and proposals for areas of research that merit further exploration.

Consistency in the Classroom Context

Why might consistent social interactions be an important feature of effective early childhood classrooms? Through their social interactions with children, teachers have an opportunity to shape children's learning and social competence (Curby, 2016). Across several developmental literatures, it is clear that the quality of social interactions between mother and child profoundly impacts children's cognitive and social-emotional functioning (Ainsworth, 1969; Bowlby, 1969; Patterson, 1982). Parallel findings are abundant in early childhood education research whereby the quality of social interactions between the teacher and students has been associated with achievement and social competence (Howes et al., 2008; National Institute of Child Health and Development [NICHD] Early Child Care Research Network [ECCRN], 2003; Mashburn et al., 2008; Stipek & Byler, 2004).

Implicit in the conceptualization of the quality of social interactions is the element of consistency. In other words, we expect high-quality social interactions to be stable. However, we know that teachers are not perfectly stable in their interactions with children (Curby et al., 2011). Most empirical work examining social interactions does not include a measure of consistency or, its converse, variability. Part of

the explanation for why this is has to do with the assumptions made by classical test theory. In classical test theory, the average is assumed to be the true score, and the variability around that average is error. However, in exploring consistency/variability, we believe that there is also important information in the variability around the mean. Some empirical work exploring consistency, particularly research that links inconsistent discipline strategies with psychopathology, has illuminated the role of consistent social interactions in fostering positive developmental trajectories (e.g., Sameroff, Peck, & Eccles, 2004).

For the past several decades, classroom social process literature has described the importance of classroom quality. Numerous measurement tools have been developed to capture the quality of children's early learning environment (e.g., the Early Childhood Environment Rating Scale [ECERS], Harms, Clifford, & Cryer, 1998; the Early Language and Literacy Classroom Observation [ELLCO], Smith, Brady, & Anastapoulos, 2008) with empirical evidence linking observed classroom social interactions to academic and social and emotional outcomes for children (Peisner-Feinberg et al., 2001). Another instrument and the focus of the research reported in this chapter is the Classroom Assessment Scoring System (CLASS©; Pianta, La Paro, & Hamre, 2008b). The CLASS captures the quality of social interactions in the classroom environment, focused on the teacher's interactions with children. The CLASS has been widely used to measure the quality of classroom interactions in preschool, including as an indicator of program quality for Head Start. The CLASS focuses on three domains of interactions including Emotional Support, Classroom Organization, and Instructional Support.

Emotional Support refers to teachers' ability to foster relationships with children, provide an environment that is responsive to children's needs, and offer choice, responsibility, and autonomy. Children in classrooms that offer high-quality Emotional Support have been shown to have higher levels of social competence (Mashburn et al., 2008; Wilson, Pianta, & Stuhlman, 2007), fewer problem behaviors (NICHD ECCRN, 2003), and increased behavioral engagement (NICHD ECCRN, 2002, 2005) across the early years of school. Importantly, Emotional Support also plays a role in academic achievement. Higher average levels of Emotional Support have been related to performance on standardized tests of early literacy in first grade (NICHD ECCRN) and growth in reading and mathematics achievement across preschool and the elementary grades (Pianta et al., 2008a). Indeed, children at risk for school failure displayed relationship skills and academic performance on par with low-risk peers in classrooms that offered high levels of Emotional Support (Hamre & Pianta, 2005).

Classroom Organization refers to teachers' ability to avoid or efficiently address behavior problems, provide students with activities, and foster engagement in classroom activities. Children in classrooms with high Classroom Organization tend to display greater self-control and increased behavioral engagement (Rimm-Kaufman, Curby, Grimm, Nathanson, & Brock, 2009). Classroom Organization has also been linked to first graders' literacy gains (Ponitz, Rimm-Kaufman, Brock, & Nathanson, 2009). Instructional Support refers to teachers' ability to promote conceptual understanding of material, provide students with feedback that helps students learn, and

provide a language-rich environment. High-quality Instructional Support has been linked to children's gains in mathematics and literacy in preschool (Curby, Grimm, & Pianta, 2010, Howes et al., 2008; Mashburn et al., 2008) and behavioral engagement in the elementary grades (NICHD ECCRN, 2003, 2005).

In order to improve the reliability, developers of classroom observation tools typically recommend collecting and averaging multiple observation cycles (Pianta et al., 2008b). Yet, fluctuations between observation cycles can provide important information about classrooms. Indeed, variability across ratings appears to play a role in children's classroom functioning.

Our work has focused on exploring variability across multiple observations and ratings using the CLASS. We emphasize the consistency of the emotionally supportive environment, in particular, as the emotional environment may be especially salient for young children. Applied to the classroom, preschoolers with teachers who are emotionally inconsistent may experience heightened levels of stress and negative emotions when they are engaged in (or witness to) inconsistent interactions. As such, the transition to formal schooling may represent a sensitive period where emotionally consistent social interactions are especially important, or conversely, inconsistent emotional interactions are especially deleterious.

Theoretical Rationale for the Role of Consistency in Children's Development

The moment-to-moment interactions children have with caregivers drive developmental processes (Bronfenbrenner & Morris, 2006). Nearly everything that is learned is learned through interacting with the social world. When infants cry, they learn whether adults are consistently or intermittently responsive to their needs. During early childhood, children can learn about appropriate displays of emotions through their interactions with adults and peers. Across childhood and adolescence, children can learn actions have consequences through a variety of positive and negative social experiences. Taken together, children are exposed to a range of social interactions, and the extent to which caregiving adults effectively engage in warm, supportive, and cognitively stimulating interactions has consequences for children's cognitive and social-emotional trajectories (Bronfenbrenner & Morris, 2006).

Children need to be able to make sense of others' emotions, behaviors, and actions. Making sense of the world (e.g., cause and effect) requires that social interactions follow a predictable pattern. When there is a predictable pattern, young children can begin to anticipate how events might unfold as a result of their actions or others' actions. Over time, children can form a working model of how a caregiver may respond to their needs. Accurately anticipating caregiver behavior may be beneficial to the child in two ways. First, predictable interactions are thought to bolster emotional security, which can lead to a child actively exploring their environment, engaging in their social world, developing better relationships with others, and

doing the important work of learning. Second, predictable interactions may allow a child to devote less attention to monitoring their environment allowing more attention to be devoted to learning tasks.

Emotional Security Multiple parenting literatures converge on the importance of consistency for promoting emotional security in early childhood. Conceptually, children need to feel a sense of security in order to actively explore their environment. This notion derives from attachment theory, which describes the extent to which children seek comfort and security from a trusted caregiver (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1969). Children with a secure attachment have mothers who are warm, sensitive, and consistent (Belsky & Fearon, 2002). Numerous studies indicate securely attached children fare better on tests of achievement, exhibit social competence, and display fewer problem behaviors (e.g., Cutrona, Cole, Colangelo, Assouline, & Russell, 1994; Moss, Bureau, Beliveau, Zdebik, & Lepine, 2009).

One likely antecedent to secure attachment is parental sensitivity (De Wolff & van Ijzendoorn, 1997; Nievar & Becker, 2008). Parental sensitivity describes a consistent pattern of interacting with children that is prompt, appropriate, and responsive (Ainsworth, 1969). Parental sensitivity is also directly linked to children's cognitive functioning and social competence (Downer & Pianta, 2006; NICHD ECCRN, 2003). Stability over time in parental sensitivity is associated with increased cognitive and social growth, as well as fewer problem behaviors (Kochanska, Barry, Aksan, & Bolt, 2008; Landry, Smith, Swank, Assel, & Vellet, 2001).

A related literature categorizes the ways parents interact with children across three broad domains: authoritative, authoritarian, and permissive (Baumrind, 1966). Research indicates children exposed to an authoritative parenting style (characterized by consistent patterns of interactions that impart both warmth and discipline) display long-lasting academic and social competence as well as reduced problem behaviors (Miller, Cowan, Cowan, & Hetherington, 1993; Weiss & Schwartz, 1996). Parents who offered high discipline but lacked warmth (authoritarian parenting style) and parents who offered warmth but lacked discipline (permissive parenting style) tended to have children who displayed more problem behaviors and less social competence compared to children from homes with authoritative parenting styles. However, children in households with disorganized or inconsistent parenting styles (a mix of authoritative, authoritarian, or permissive) had lower achieving and more poorly behaved children than parents who consistently engaged in any single parenting style (Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987), suggesting that consistency in the parenting style has an effect beyond the parenting style itself.

Taken together, warm, sensitive, and consistent interaction styles between children and caregivers in the home foster deep attachments that promote long-term positive adjustment for children. The relationships that children form with teachers, at least in the early childhood years, can be best understood through an attachment theory lens (Zionts, 2005). Children spend a great deal of time in school interacting

with teachers. Over time, children may come to form individual attachments (secure or otherwise) with teachers as caregivers. Children who develop a secure base in the teacher-child relationship may feel more comfortable exploring the learning environment compared to children who lack a secure base in the classroom. For example, the extent to which children feel secure in their preschool classroom relationships is predictive of social-emotional skills, perhaps related to children's willingness to engage with the social environment and practice socioemotional skills (Woods, 2007). Thus, the antecedents of attachment, the various forms of attachment, and the consequences of attachment are thought to play out in early childhood classrooms as well as in the home.

Attentional Resources One explanation for the impact of consistency on children's development is that young children's selective attention strategies (e.g., focusing attention on a learning activity and tuning out distractions) are in a nascent stage at preschool entry and undergo rapid development across 3–8 years of age (Miller & Seier, 1994). Multitasking is an emerging skill that expends a great deal of cognitive energy. Thus, the effort required to monitor an inconsistent teacher may leave little room to attend to learning tasks. An accumulation of interrupted or distracted learning opportunities may, consequently, prove especially deleterious for academic achievement gains.

Past work linking teachers' emotional consistency with children's achievement, social skills, and problem behaviors speculates that an emotionally inconsistent teacher interferes with children's executive functioning (Curby, Brock, & Hamre, 2013). Children in an emotionally inconsistent classroom must divide their attention between classwork and an unpredictable teacher. Resource depletion theory provides a framework for understanding how attentional resources are depleted, directed, and related to multiple domains of functioning (Kaplan & Berman, 2010).

Attention is a limited resource that requires a great deal of cognitive effort (Kaplan & Berman, 2010). Just as muscles become fatigued with sustained use, so do attentional resources eventually become depleted. The cognitive haze experienced after prolonged directed attention is attributed to resource depletion. Adults who complete a large project often feel exhausted after a deadline is met, or irritable after grappling with a complex problem. Kindergarteners similarly feel spent after attending to challenging tasks, keeping in mind that learning to interpret and write letter and number symbols requires immense concentration and coordination across different regions of the brain. Adults need only attempt to learn a foreign language with new symbol systems and then write with their non-dominant hand to sympathize with the cognitive load kindergarteners face as a daily routine.

Resource depletion can also occur when attention is frequently shifted (e.g., between a learning task and a distraction) or when multitasking (paying attention to multiple things simultaneously) is required. Children tend to pay attention to the most stimulating features of the environment (Gersten, 1989). In an ideal setting, the most salient aspect of the classroom environment would be the learning task, and all social interactions would serve to enhance the learning experience. If a teacher is unpredictable in his or her interactional style, children may involuntarily

switch their attention away from learning and toward the teacher when they might have otherwise been engaged in learning.

Resource depletion clearly impacts the ability to engage in cognitive tasks, but it also appears to impact behavior. Depleted cognitive resources interfere with self-regulation and are associated with impulsive, irrational, or aggressive behavior (see Kaplan & Berman, 2010 for a review). In a classroom with an emotionally inconsistent teacher, more attentional resources may be directed toward monitoring the teacher instead of focusing on learning tasks. Moreover, the act of monitoring the environment, or switching between learning tasks and monitoring the social environment, actively depletes resources that could be dedicated to behavioral control.

In sum, numerous developmental literatures suggest consistency facilitates children's development across multiple domains of functioning. From a developmental perspective, warm and consistent social interactions encourage learning and behavioral regulation, whereas inconsistent social interactions deplete cognitive resources and hinder secure attachments. The following section summarizes research conducted to date that explores the role of consistency within classroom contexts. Specifically, we review studies that examine the extent to which the teacher's provision of consistent Emotional Support is associated with their children's academic achievement, classroom behavior, and relationships with teachers.

Prior Research Linking Teacher's Emotional Support Consistency with Children's Outcomes

Traditionally, the quality of classroom interactions have been observed on multiple occasions within each classroom and averaged to create an overall quality score with any variance attributed to measurement error from various sources (Mashburn, Downer, Rivers, Brackett, & Martinez, 2014; Pianta et al., 2008b). As such, teachers have been assumed to exhibit a level of Emotional Support that remains constant across observations and time periods (e.g., Burchinal, Vandergrift, Pianta, & Mashburn, 2010; Mashburn et al., 2008). Drawing from attachment theory and resource depletion theory, we sought to explore the added value of examining variability beyond average quality scores to gain a better understanding of classroom affordances that promote children's adjustment.

Our seminal work examining Emotional Support Consistency found associations with children's cognitive and social-emotional development above and beyond average levels of classroom Emotional Support using a large, nationally representative sample of prekindergarten (pre-K) students across 693 classrooms. Children were directly assessed in the fall and spring of pre-K on their receptive and expressive vocabulary, rhyming, applied problems, and letter-naming skills. Teachers also rated children's social competence and problem behaviors during the fall of the subsequent kindergarten year. Results indicate that the consistency of emotional support was predictive of multiple child outcomes. More specifically, when

consistency of Emotional Support was entered into multilevel models without average Emotional Support, it significantly predicted gains across all five academic and two behavior outcomes. When combined with average Emotional Support, consistency continued to be a significant predictor of three language outcomes (expressive vocabulary, rhyming, and letter naming) and social competence, whereas average Emotional Support did not predict any of the outcomes when consistency was concurrently considered (Curby et al., 2013). In practical terms, Emotional Support Consistency was a better predictor of children's pre-K gains than the average level of Emotional Support, suggesting that stability in social interactions is at least as important as quality for nurturing children's learning and social development in the classroom.

In order to test our assumption that consistency in teachers' emotionally supportive interactions promotes attachment bonds between students and teachers, we conceptualized teacher-child relationships (both closeness and conflict within the relationship) as mediators between observed Emotional Support Consistency and children's outcomes in a sample with moderate sociodemographic risk. In other words, we hypothesized that consistently supportive interactions nurtured close relationships with teachers and diminished conflict; in turn teacher-child relationship quality would either enhance or hinder children's behavioral development. We examined findings both within pre-K and across the transition to kindergarten. Findings revealed that teachers' Emotional Support Consistency was indirectly associated with pre-K social competence and problem behaviors, mediated by both conflict and closeness (Brock & Curby, 2014). Moreover, pre-K teacher's Emotional Support Consistency continued to indirectly contribute to kindergarten classroom behavior, meaning that pre-K teacher's Emotional Support Consistency predicted levels of conflict and closeness within the teacher-child relationship during the pre-K year, which in turn contributed to children's behavior patterns. Children's behavior patterns were still evident after the transition to kindergarten, suggesting children's experience of consistent or inconsistent Emotional Support in pre-K has implications for children's behavior beyond the year of exposure.

In another study, preschool classrooms with more variability in Emotional Support were also observed to have less emotionally regulated/productive children (Zinsser, Bailey, Curby, Denham, & Bassett, 2013). Furthermore, for teachers who had high average levels of emotional support, having high variability predicted more emotionally negative/aggressive behavior, while high consistency predicted less. Thus, findings suggest teachers' Emotional Support Consistency contributes to children's behavior as they prepare for the transition to kindergarten.

Some children may be more temperamentally susceptible to fluctuations in the social environment. Adaptability in particular is a temperamental construct that describes the extent to which children perceive change as stressful. We speculated that children with low adaptability would be especially susceptible to attentional resource depletion, because they would have a lower threshold for involuntarily paying attention to stimuli in the environment. In prior work, less adaptable kindergarten students were three times more likely to be observed monitoring the social environment than more adaptable peers (Gersten, 1989). Moreover, children with

low adaptability may be more highly attuned to the emotional state of others. Children with low adaptability may experience changes in the social environment as more emotionally distressing, and they may reach resource depletion faster in emotionally inconsistent classrooms where they would be expected to switch between involuntary and directed attention more frequently.

We employed a child X environment framework to examine whether children with low adaptability experienced more adjustment difficulty in less emotionally consistent classrooms, with the hypothesis that children with low adaptability would struggle academically and behaviorally in classrooms with less Emotional Support Consistency. Findings reveal that adaptability was highly predictive of children's outcomes in low- but not high-consistency classrooms. Specifically, adaptability played a greater role in directly assessed literacy skills, mathematics, and expressive vocabulary as well as teacher-rated academic competence, assertion, self-control, and classroom behavior in low-consistency classrooms (Brock & Curby, 2016). Results suggest that classrooms characterized by a high degree of Emotional Support Consistency can more effectively accommodate a range of learners, notably those who are temperamentally prone to experience change as stressful.

Taken together, multiple studies converge on the notion that Emotional Support Consistency supports children's developmental trajectories across a wide range of outcomes, including an array of academic assessments across content areas, behavioral measures, and teacher-child relationship quality. Our past work has focused on pre-K through third-grade samples, and we have narrowly defined consistency by examining the extent to which observed Emotional Support scores vary across the multiple observation occasions within each day. The proceeding section describes new analyses that (1) explore how children's self-regulatory abilities interact with teachers' Emotional Support Consistency and (2) describe family mobility patterns from a consistency lens. Following, we ponder new possibilities and potential measurement approaches to expand our understanding of consistency in the classroom.

New Empirical Evidence Describing the Role of Consistency in Classroom Contexts

A logical next step in our work was to unpack individual differences in children's self-regulation and their response to the consistency of the classroom climate. We examined whether teachers' Emotional Support Consistency mattered more for preschool children's learning and behavior gains across the school year if they had lower levels of self-regulation. Self-regulation is widely acknowledged as a critical ingredient to a successful transition to kindergarten (Ponitz, McClelland, Matthews, & Morrison, 2009; Rimm-Kaufman et al., 2009). Yet, children enter formal schooling with a range of self-regulatory abilities (Von Suchodoletz, Trommsdorff, Heikamp, Wieber, & Gollwitzer, 2009). The extent to which classroom contexts can accommodate a variety of learners and which contextual affordances offer support

to children with low self-regulation is key to assuring a smooth transition into kindergarten. We situate this research study in preschool where self-regulatory capacities are in a critical phase of development.

Study 1: Teacher's Emotional Support Consistency and Children's Self-Regulation

Children's cognitive and social-emotional outcomes were directly assessed at the beginning and end of the preschool year using a variety of academic direct assessments and teacher ratings of children's social-emotional and behavioral skills in the classroom at the beginning and end of the year. The quality of classroom interactions was assessed at three time points during the year (fall, winter, and spring) by trained independent assessors using the CLASS (Pianta et al., 2008b). The study included 593 children and 95 teaching staff members in 31 classrooms from 5 free public charter preschool programs. The preschools served children with the following demographic characteristics: 79% of the children ($n = 466$) qualified for free or reduced price lunch. Eighty-three percent ($n = 492$) of children were Black/African-American, 14% ($n = 83$) were White, 3% ($n = 18$) were Hispanic, 2% ($n = 10$) were Asian, 1% ($n = 3$) were Native Hawaiian/Pacific Islander, and 1% ($n = 4$) were American Indian/Alaskan. Ten percent ($n = 60$) of the children were English language learners. The sample was 51% female ($n = 302$) and 49% male ($n = 291$). Children ranged in age from 2 years 11 months to 4 years 11 months ($M = 3$ years 10 months).

Teaching staff positions included teacher ($n = 42$), assistant teacher ($n = 29$), teaching fellow ($n = 18$), school aide ($n = 4$), and special education coordinator ($n = 2$). The teaching staff was 7.4% male ($n = 7$) and 92.6% female ($n = 88$). The median age of the staff was 25 years old, with a median of 4 years of experience in the early care and education field. In 80% of the classrooms, there were two or more teaching staff members in the classroom for at least 8 h per day. Most of the teaching staff (76.8%, $n = 73$) held at least a bachelor's degree.

Variables of interest included children's self-regulation and teachers' Emotional Support Consistency. Self-regulation groups were identified by creating composite scores using the task orientation and behavioral control subscales of the teacher-child relationship scale (T-CRS) at the beginning of the school year (Perkins & Hightower, 2002) through pre-K teachers ratings. T-CRS subscales assess children's attention and impulse control as well as their ability to complete tasks, follow directions, and manage their own behavior. Students who scored below the 15th percentile, or approximately one standard deviation (SD) below the mean, on any subscale were considered to be at risk for poor academic and behavioral performance (Montes, Hightower, Brugger, & Moustafa, 2005). We created a dichotomous variable where students who scored one standard deviation below the average were coded 1 (for low self-regulation) and all other scores were assigned 0.

Consistency of within-day Emotional Support was computed in several steps. First, the amount of variability (variances) in each teacher's Emotional Support scores for each day of observation (fall, winter, and spring) was computed and included eight observations per day. Second, the average of the three within-day variances for each classroom was computed by taking the average of the three variances. Third, the square root of the average variances was calculated to convert them to standard deviations. Finally, the sign for the variance variable was reversed to reflect consistency. Emotional Support Consistency was used as a classroom-level predictor, and scores closest to zero reflect a narrower range in Emotional Support scores across observations (i.e., more consistency).

In terms of analytic approach, multilevel modeling best represents the structure of the data (Raudenbush & Bryk, 2002). Because research questions include differences both between individuals (child-level variables) and between classrooms (average levels and consistency of emotional support) and their relation to children's academic and social-emotional improvements across the year, it was necessary to account for the nesting of children within classrooms. Multilevel regression models were run for each outcome in the spring. The main predictors of interest included the self-regulation grouping variable at the child level, the Emotional Support Consistency variable at the classroom level, and their cross-level interaction to test the extent to which the associations between Emotional Support Consistency and children's development was stronger for children who began pre-K with lower self-regulation skills. All analyses are controlled for baseline score (centered), age (centered), gender (1 = male), free/reduced price lunch status (1 = receives), and English language learner status (1 = English language learner) at Level 1 and Emotional Support average at Level 2.

Fall-Spring Improvement in Child Outcomes Preliminary analyses indicate that children in this sample performed slightly lower than national averages on all standardized assessments. The means and standard deviations for classroom-level variables were Emotional Support (M = 5.79, SD = 0.38) and Emotional Support Consistency (M = −0.63, SD = 0.19). As was typical in prior work, Emotional Support mean and consistency variables were highly correlated ($r = 0.72$, $p < 0.01$). Figure 1 demonstrates classrooms that offer higher-quality Emotional Support also tend to provide greater consistency, whereas classrooms that offer lower-quality Emotional Support also tend to provide less consistency.

Phonological Awareness Phonological Awareness was assessed using the Test of Early Preschool Literacy (TOPEL; Lonigan, Wagner, Torgesen, & Rashotte, 2007) and predicted by classroom Emotional Support Consistency and by children's self-regulation (1 = low self-regulation). Results indicated that Emotional Support Consistency had a positive main effect (b = 9.13, p = 0.03), and having low self-regulation had a negative main effect ($b = -6.16$, $p < 0.001$). Furthermore, there was a statistically significant interaction (Fig. 2) whereby children in the low self-regulation group displayed phonological skills on par with the high self-regulation

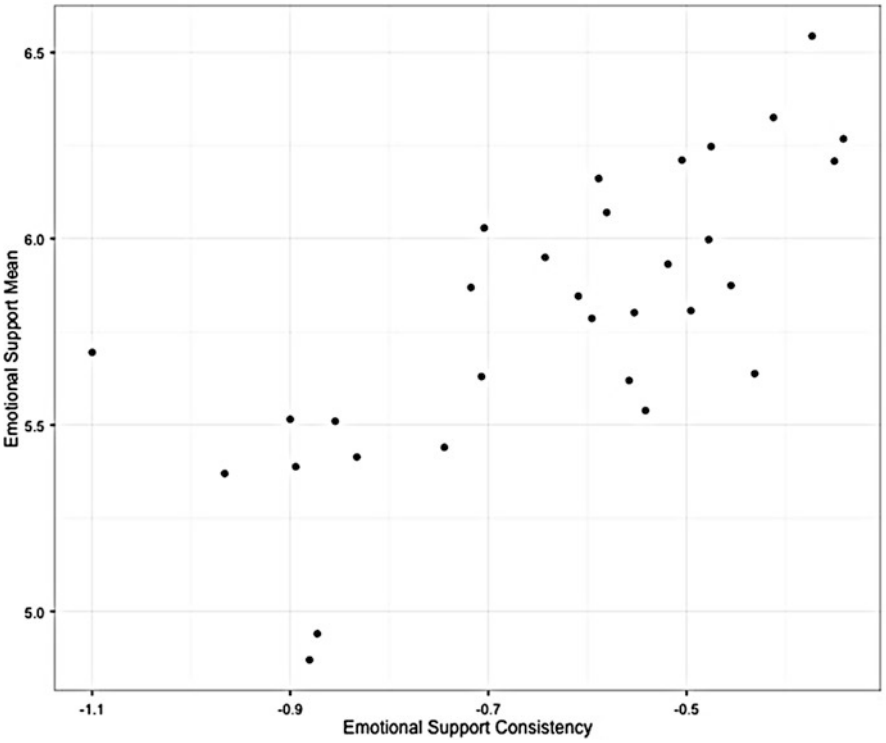

Fig. 1 Correlation between emotional support mean and consistency variables

group when exposed to classrooms with more consistency in Emotional Support ($b = 21.58$, $p < 0.01$).

Vocabulary Similar evidence was found for an interaction when examining definitional vocabulary as assessed by the TOPEL (Lonigan et al., 2007). Here there was not a main effect for Emotional Support Consistency, but there was a significant interaction ($b = 12.40$, $p = 0.01$) suggesting children in the low self-regulation group made Vocabulary gains on par with high self-regulation students when placed in classrooms with high Emotional Support Consistency (Fig. 3).

Peer Social Skills Lastly, we found trend-level evidence for a similar phenomenon playing out with peer social skills (T-CRS; Perkins & Hightower, 2002). Here neither main effect was significant, but the interaction suggested a relation whereby children who had low self-regulation displayed more positive peer social skills in classrooms that were higher in Emotional Support Consistency (Fig. 4).

Math Ability (Test of Early Math Ability [TEMA-3]; Ginsburg & Baroody, 2003), Expressive Language (Peabody Picture Vocabulary Test [PPVT-4] Dunn & Dunn, 2007), and Print Knowledge (TOPEL; Wilson & Lonigan, 2009) were also

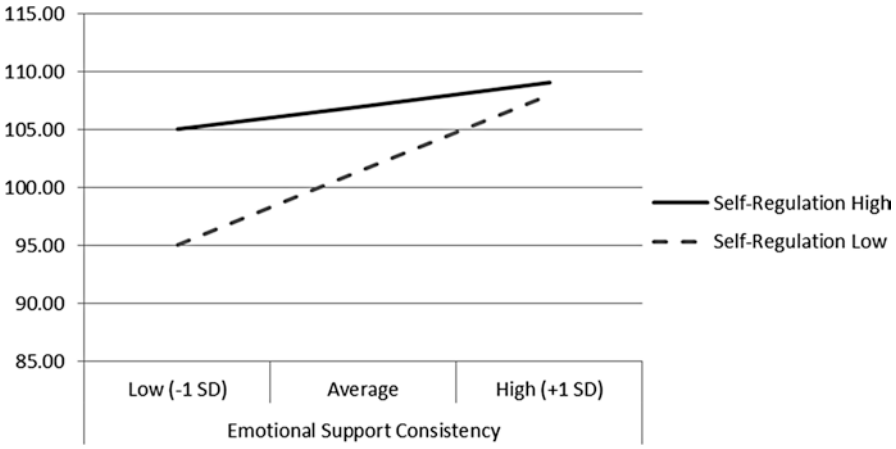

Fig. 2 Consistency moderates the contribution of self-regulation to phonological awareness

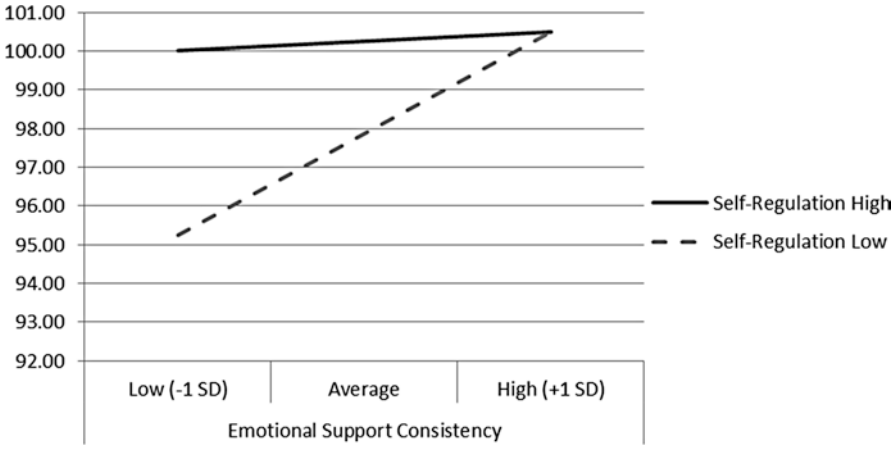

Fig. 3 Consistency moderates the contribution of self-regulation to definitional vocabulary

examined, but none found evidence of an interaction. Emotional Support Consistency remained a significant positive indicator of the outcome for Math Ability, was trending toward significance for Expressive Vocabulary, and was nonsignificant for Print Knowledge. Membership in the low self-regulation group remained a significant negative indicator for these other three outcomes.

In sum, findings reveal children with low self-regulation were able to improve their skills at a rate consistent with more self-regulated peers when placed in classrooms characterized by high Emotional Support Consistency. As with prior work suggesting temperamentally vulnerable children benefited more from consistent classrooms, less regulated children may derive scaffolding, modeling, or support from a consistent environment sufficient to narrow or close skill gaps in academic

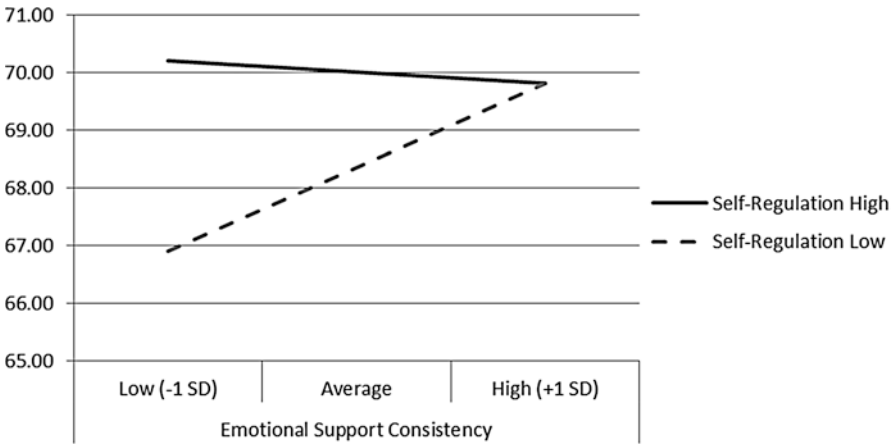

Fig. 4 Consistency moderates the contribution of self-regulation to peer social skills

and behavioral functioning. It is important to note that children's display of self-regulation has been associated with poverty and skill gaps in other work. Findings presented here hint that the provision of consistent classroom environments may play a key role in ameliorating early skill gaps for children living in poverty.

Study 2: A Description of Broad Consistency Characteristics for Children Living in Poverty

Beyond capturing moment-to-moment consistency in classroom social interactions, broad disruptions to the classroom social environment also occur. For example, student absenteeism, mobility patterns, and teacher turnover all disrupt classroom social contexts. Some amount of instability in classroom social processes is inevitable and unavoidable—children get sick, families move, and teachers retire. Yet, the rate at which disruptions occur in classrooms that predominantly serve children living in poverty poses unique challenges. Children living in poverty have lower school attendance (Gottfried, 2014; Ready, 2010), move with greater frequency (Coultona, Richtera, Kimb, Fischera, & Choa, 2016; Obradović et al., 2009), and experience more changes in teacher personnel (Clotfelter, Ladd, Vigdor, & Wheeler, 2006) across the transition to kindergarten and early school years with negative consequences for learning and behavior trajectories.

Family mobility patterns that require changing school midyear are probably the most impactful disruption to children's classroom adjustment. If children's behavior and academic performance suffer when a teacher's social interaction style fluctuates across a school day, imagine the consequences of changing classrooms entirely. Whereas other children develop a rhythm for learning and socially interacting as the school year progresses, a new student's cognitive resources are redirected to

comprehending an entirely new social environment, leaving less room for academic and self-regulatory skill development.

Indeed, findings from the Head Start Impact Study revealed that moving one or more times during the pre-K year was associated with lower academic performance in kindergarten and first grade, compared to children who did not move at all during the pre-K year (Schmitt & Lipscomb, 2016). For children living in poverty, moving three or more times prior to kindergarten entry was associated with internalizing, externalizing, and attentional problems compared to children who moved less frequently (Ziol-Guest & McKenna, 2014).

Developmentally, the age at which children experience mobility is important to consider. Residential mobility in middle childhood or adolescence has been directly associated with behavior problems in the classroom, whereas in early childhood it appears that children's internalizing and externalizing behaviors and reading and math achievement were negatively affected by mobility indirectly through increased maternal stress and reduced maternal sensitivity (Anderson, Leventhal, & Dupéré, 2014).

The antecedents and consequences of mobility patterns are complex and overlap with other correlates to poverty. For example, children who experience higher mobility rates are more likely to be referred for special education (Gottlieb & Weinberg, 1999). Even when free lunch status, ethnicity, English language learner status, special education eligibility, and maternal education were statistically held constant, children who experienced family mobility demonstrated poorer performance across academic multiple outcomes (Cutuli et al., 2013), suggesting that the move itself causes disruption, rather than simply being a marker of poverty. Long term, the achievement gap tends to narrow for children living in poverty who experience lower rates of mobility, whereas children with high rates of mobility see an increase in the achievement gap across the elementary school years (Herbers et al., 2012).

In order to highlight the broad inconsistencies in early childhood classroom experiences for children living in poverty, we documented the number of moves that occurred for a sample of children living in endemic poverty from prekindergarten through second grade. Table 1 provides descriptive information about the sample which includes 354 children enrolled in underperforming elementary schools situated in an industrial belt surrounding an urban center. Ninety-six percent of the sample identified as belonging to an ethnic minority, 96% received free lunch status, and about one third of mothers did not graduate from high school.

Table 2 reveals family mobility patterns. For the pre-K year, we relied on parent report of the number of household moves. In kindergarten and first grade, we conducted home interviews and were able to document household moves as they occurred. In second grade, we only followed a subset of 140 families per the original study design. It should be noted that our frequency count underestimates the actual number of moves that occurred within families because we eventually lost contact with about a quarter of our sample who both moved and changed phone numbers, thus losing the ability to tally additional moves. Finally, we observed that on a few occasions, children changed classrooms within the school year for either

Table 1 Demographic characteristics of sample with high mobility patterns

	n	%	% Missing	M	SD	Min	Max.
Demographic variables							
Child age in years at time 1	339		4%	5.41	0.33	4.5	6.2
Gender	348		2%				
Male = 1	165	47%					
Female = 0	183	53%					
Ethnicity	311		12%				
African-American/Black	283	91%					
Hispanic/Latino	15	5%					
Caucasian/White/other	13	4%					
Free/reduced lunch	303		14%				
Yes = 1	291	96%					
No = 0	12	4%					
Maternal education	305		14%				
High school or more = 1	216	71%					
Less than high school = 0	89	29%					

Table 2 Mobility patterns for children living in poverty ($N = 354$)

Consistency descriptors	Pre-K	K	1st	2nd*	Total
# of children who relocated once	9.9%	23.7%	21.5%	13.57%	68.7%
# of children who relocated two or more times	0.0%	2.8%	1.7%	0.71%	5.2%
# of children who changed teachers within a school	0.0%	2.5%	6.8%	5.00%	14.3%
# of moves (any)	9.9%	29.1%	29.9%	19.3%	**88.2%**

*2nd grade data reflects a subsample of 140 students that were assumed to reflect the mobility patterns of the full sample

behavioral reasons or to preserve student/teacher ratios. We elected to note this disruption but did not tally teacher retirements, reassignments, or long-term illnesses because we acknowledge those disruptions are more challenging to avoid.

Findings indicate most students in our sample moved at least once from pre-K through second grade, with nearly a quarter of children moving during the kindergarten year. Only 5% of the sample had two or more moves documented, although high mobility families were harder to track. When classroom reassignments were included, over 88% of children experienced a change in classroom environment at least once in their early school years.

In terms of policy implications for families that experience housing insecurity, it may be useful to consider the role of consistency in children's social lives for promoting long-term academic and socioemotional adjustment. For example, families in our study typically moved within a few miles of their prior residence but into a new school zone. Within reason, districts may consider allowing and encouraging students to complete the school year in their original classrooms in order to alleviate some of the upheaval that comes with matriculating into a new social environment midyear.

Discussion and Future Directions

To date, all of our publications exploring consistency in Emotional Support have used a standard deviation variable to capture the variability in scores across a day in early childhood and elementary settings. We have considered other possibilities, including alternative measurement approaches, capturing other definitions of consistency, the role of consistency across developmental phases, and acknowledging that successful interventions inherently create variability. We share our ponderings in hopes that they may generate new ideas to expand the field.

Consistency Measurement Approaches

The measurement approach we have taken to date does not rate consistency directly but rather extrapolates it from multiple occasions of observational data. In other words, researchers routinely average scores from an observation day. We not only do that but also compute the standard deviation for those same scores. This then allows us to have a measure of variability that we then reverse to capture consistency (Curby et al., 2013). We have used one variant of this method. Instead of capturing all of the variability in scores, including the first to last observations, we have calculated the variance between contiguous cycles (and converted to an average standard deviation). This allowed us to isolate the change that we thought best aligned to our theoretical model of what change matters.

There are also various approaches that work with the minimum and maximum values. Although minimum and maximum values are more frequently used as descriptive statistics, there is nothing that actually prevents either from being used in analyses. Minimum and maximum are necessarily related to the standard deviation but may better detect low-frequency but important events. This is perhaps best seen within the Negative Climate dimension of Emotional Support. If a teacher is generally well regulated, but has an outburst of negativity in the midst of many coding cycles, the maximum may be more telling about the teacher's capacity for negativity.

Another approach to thinking about stability in Emotional Support is to think about the actual mean changes over time. In other words, repeated measurements can be highly correlated, but that does not indicate that the mean is staying the same—or changing. Some may want to determine whether the mean is actually going up or down over time (i.e., the slope). Thus, an alternative method for determining consistency is to think in terms of growth. For example, small linear increases in Negative Climate and Chaos have been found over the course of a morning in third and fifth grades (Chomat-Mooney et al., 2008). If desired, the slope could be used as a predictor of children's outcomes.

The last approach we will highlight has to do with a group of analyses centered on squared successive differences (Farmer & Kashdan, 2014). In this method, the

difference between two adjacent measurements is taken and squared such that larger changes are weighted more, and all changes are numerically positive. These differences can be averaged to compute a mean successive differences statistic that could be used in other analyses predicting children's outcomes.

Our research has focused on consistency of within-day teacher emotional support. Yet, there are several other classroom features that fluctuate and are yet to be explored. In terms of moment-to-moment consistency, organizationally and instructionally supportive interactions also vary across observation cycles. And, looking beyond moment-to-moment consistency, across days or even across developmental phases may be important to consider.

Consistency of the Organizational Environment Organizational activities include managing behavior and providing activities. Classrooms that are sometimes chaotic and sometimes structured may leave children unsure of classroom expectations and less able to efficiently engage in learning activities. Effective behavior management approaches underscore the importance of consistent application of classroom rules and discipline strategies (Brophy, 1983; Emmer, Evertson, & Anderson, 1980). Researchers that experimentally manipulated the ways in which mothers responded to their toddlers during a laboratory visit found mothers who sometimes offered reprimands and sometimes offered positive feedback had toddlers who displayed higher rates of problem behaviors than mothers who either consistently reprimanded, ignored, or offered positive feedback—suggesting that consistency is potentially as important as the quality of interactions in behavior management (Acker & O'Leary, 1996). Students with teachers who are organizationally and behaviorally inconsistent may not know what teachers expect of them in terms of their behavior or work.

Consistency of the Instructional Environment The preschool classroom has, on average, low levels of Instructional Support, with classrooms scoring between a 2 and 3 (on a 1 *low* to 7 *high* scale) (Pianta et al., 2008b). This means that the average preschool child typically experiences classrooms in which feedback is rarely used as a tool to expand learning and opportunities to develop concepts are less visible than rote learning. Given this reality, it could be that variability in Instructional Support would actually be a positive indicator of quality, at least in the presence of low average levels. In other words, given the low average, when there is variability, children are more likely to experience occasions of high-quality interactions. In fact, given that scores in the high range of the CLASS Instructional Support scale (i.e., 6 or 7) are relatively rare (La Paro et al., 2009) and that there appear to be effects for Instructional Support even within samples in which the highest average score is a 5 (Burchinal et al., 2010), it is possible that classrooms with high variability in Instructional Support offer the best case scenario for children in classroom settings.

Across-Day Consistency To date, our work has focused on the within-day consistency of emotional support. In our initial thinking, within-day consistency was the

most salient aspect of consistency for children because it was closest to the moment-to-moment interactions that drive development (Bronfenbrenner & Morris, 2006). However, consistency across longer lengths of time has the potential to affect development as well. Consistency could be thought of across contiguous days in the week. Or it could be thought of across months or semesters. Nonetheless, across-day consistency has the potential to relate to children's outcomes as well. Does it matter that a teacher has bad and good days (but is consistent within each day)? To date, this is unexplored. Furthermore, a related point is that there can be inconsistency within a day—for example, a teacher becoming increasingly negative throughout the day (Chomat-Mooney et al., 2008), but across days there could be this repeating pattern, making it a predictable environment for children. Thus, there remain several issues with respect to the amount of time that is being captured in the consistency variable that remain unexplored.

Interventions That Improve Quality May Induce Variability It is interesting to think about variability in Emotional Support in light of school-based interventions. Interventions are, by their nature, disruptive. Interventions that are meant to improve emotionally supportive interactions may in fact make teachers less consistent as they work to implement the intervention into their teaching. This variability may have unintended consequences. It may be that the improvements in child outcomes based on the improvements in instructional quality may be offset by the variability that was induced by the intervention. As such, child outcomes may not see the full benefit of the intervention until the instructional quality has stabilized (potentially post-intervention).

When Consistency Occurs Not only is the amount of time important when considering the consistency metric, but it may be that consistency is more important at certain phases of development than others. For several reasons, consistency may be more important for younger children than older children. Older children are likely to have a larger number of attachments and experience a greater variety of environments (e.g., multiple classrooms, after school activities). Thus, a teacher being a source of attachment (or not) is not as singularly important. Moreover, older children have more developed executive functions. Thus, it may not be as effortful to direct attention away from an inconsistent teacher. Other factors, including prior knowledge and pre-existing friendships, are likely to play larger roles in determining outcomes (Alexander & Entwisle, 1988), leaving less room for other facets of the environment, such as consistency, to play a prominent role in developmental processes.

Nonetheless, some promising early work with older students suggests consistency during the school day contributes to student behavior. One of the main challenges to studying consistency beyond early elementary classrooms is that the school day is structurally different, with children cycling through different settings (and presumably teachers) who would be expected to display a range of interaction styles. Developing relationships with multiple teachers across shorter periods of

time leaves less room for nurturing deep emotional bonds. Respecting the structural nature of early adolescent schooling, one large-scale study following fifth-grade students in 805 schools examined the contribution of consistency across teachers rather than across observation cycles throughout a school day. Findings suggested that when students had differences in the provision of Emotional Support across settings, students were observed to be less engaged and were rated as having higher conflict with teachers (LoCasale-Crouch, Faiza, Pianta, Rudasill, & DeCoster, 2018). Interestingly, consistency examined within a setting (i.e., not changing teachers) did not predict student outcomes. Thus, consistency may be important for children's development beyond the early years of schooling, but the salient features of what constitutes consistency may differ developmentally.

Consistency at the Dimension Level When we have addressed consistency in Emotional Support, the Emotional Support domain is the average of several items. Thus, by looking at the higher order Emotional Support construct, we are not directly capturing the variability in the dimensions that make up Emotional Support. When we have calculated Emotional Support Consistency, we have first calculated the average Emotional Support score at each time point. Emotional Support could have the same average at two time points, but the dimensions that constitute the average domain score could fluctuate. Dimensions include Positive Climate, Negative Climate, Teacher Sensitivity, and Regard for Student Perspectives. To illustrate, a teacher may be very positive in one observation cycle by asking about a child's family and sick sister and then be very sensitive in another cycle, by noticing and helping a child struggling on a task. This teacher would be consistent in Emotional Support even though the dimensions that make up Emotional Support are shifting in their levels. A previously unexplored approach would be to explore the variability that may be happening at the dimension level for the items that make up Emotional Support.

Conclusion

Encouraging teachers to be consistent in their provision of Emotional Support seems to promote children's development in academic, social, and emotional domains. Even when associations are not present, consistency does not appear to be deleterious to children's development. Although this may not hold true at the extremes of unsupportive environments, stable environments do seem to offer some advantages for children, even when environments are stably mediocre. The importance of Emotional Support Consistency may be magnified for children who have particular characteristics such as being temperamentally sensitive or living in poverty. Of interest, prior research determined that pre-K students in classrooms with high average levels of Emotional Support experienced less stress throughout the day as measured by salivary cortisol (Hatfield, Hestenes, Kintner-Duffy, & O'Brien, 2013). It would be intriguing to extend this work to determine the extent to which

children experience inconsistent Emotional Support as stressful and whether stress mediates the relation between consistency and children's developmental trajectories.

Our conclusions are based on theoretical and empirical work, but there is much more that could be done to understand the nature of consistency, when it matters, for whom, and why. There remain many open questions, some of which we have delineated in this chapter to encourage further exploration. For example, we hope to better understand the importance of the timing of consistency, so that recommendations can be made about when it is important and, perhaps, when it is not. Following, factors that promote or hinder consistency can be investigated to support teachers in their classroom practices. Finally, policy makers may want to weigh the role of consistency when considering changes that disrupt stable contexts for children.

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Continuity and Change in Low-Income Children's Early Learning Experiences Across the School Transition: A Comparison of Head Start and Kindergarten Classrooms

Tashia Abry, Michelle Taylor, Manuela Jimenez, Megan E. Pratt, and Jennifer LoCasale-Crouch

Abstract In this chapter, we leverage the nationally representative Head Start Family and Children's Experiences Survey (FACES) to provide a US population-based description of prekindergarten and kindergarten learning experiences among an economically disadvantaged group: 4-year-old children attending Head Start. We begin by introducing Head Start as a federal initiative to support the school readiness of low-income children. We then highlight emerging evidence of benefits associated with continuity in supportive educational experiences across early schooling. After a brief overview of the FACES data, we describe structural elements (i.e., programmatic infrastructure or design elements) and process-related elements (i.e., direct interactions among individuals or between individuals and learning activities) of children's learning experiences, focusing on areas of continuity and change across the 2 years. Findings highlight strengths of children's Head Start and kindergarten experiences while revealing areas of discontinuity across the transition that may be targeted to bolster Head Start children's school readiness and adjustment. These patterns also speak to the role of early education policy in promoting high-quality early learning experiences for low-income children across preschool and kindergarten years.

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Continuity and Change in Low-Income Children's Early Learning Experiences Across the School Transition: A Comparison of Head Start and Kindergarten Classrooms

Mounting evidence of the social and economic value of early intervention has spurred increased investments in early education programs in recent decades, including the US federally funded Head Start preschool program. Head Start, designed to provide high-quality early education and support services to economically disadvantaged children and families, is offered in direct response to a large and growing body of research underscoring the importance of supportive structures and processes in early schooling, particularly for low-income children (NICHD ECCRN, 2002a, 2002b; Phillips et al., 2017; Pianta, La Paro, Payne, Cox, & Bradley, 2002). Despite ongoing quality improvement and standardization efforts, there remains substantial variability across Head Start centers and classrooms, meaning children are likely to have very different learning experiences while attending Head Start (Walters, 2015). These children then matriculate into kindergarten classrooms that also reflect a diverse range of structures and processes (Bassok, Latham, & Rorem, 2016; Early, Pianta, & Cox, 1999; La Paro et al., 2009). Because Head Start largely operates independent of the public K-12 education system, there is little systematic oversight provided by either institution to monitor or promote the continuity or alignment of children's learning experiences across the school transition. Discontinuity between Head Start and kindergarten experiences likely undermines the benefits of high-quality preschool, given the importance of children's experiences before, during, and after the prekindergarten year and growing evidence that continuous exposure to supportive learning environments is critical to sustain and amplify early gains (Phillips et al., 2017; Reynolds, Magnuson, & Ou, 2010).

These points highlight a need to better understand what low-income children are experiencing in Head Start and beyond, as well as the degree of consistency in their experiences across the school transition. In this chapter, we leverage the nationally representative Head Start Family and Children's Experiences Survey (FACES) to provide a US population-based description of prekindergarten and kindergarten learning experiences among an economically disadvantaged group: 4-year-old children attending Head Start. We begin by introducing Head Start as a federal initiative to support the school readiness of low-income children. We then highlight emerging evidence of benefits associated with continuity in supportive experiences across early schooling. After a brief overview of the FACES data, we describe structural elements (i.e., programmatic infrastructure or design elements) and process-related elements (i.e., direct interactions among individuals or between individuals and learning activities) of children's learning experiences, focusing on areas of continuity and change across the 2 years. We conclude with a synthesis of observed patterns and discussion of potential implications in the context of current early education policy.

Head Start as a Context to Support Early Learning Among Low-Income Children

Early childhood is a developmental period of great plasticity and transformation when children are especially responsive to deficits and affordances in their environment, such as supportive learning experiences (Blair, 2002; Kaufman, Kaufman, & Nelson, 2015). This is especially true for economically disadvantaged children who often face a constellation of risk factors that impede their initial school readiness and lead to early gaps in academic and social-emotional learning that are likely to persist or widen over time in the absence of intervention (Bradley & Corwyn, 2002; Heckman, 2006; McClelland, Acock, & Morrison, 2006; Stipek & Ryan, 1997). There is widespread consensus that low-income children benefit from preschool attendance and supportive early learning experiences to a greater extent than their more advantaged peers, making high-quality preschool and other early educational programming critical to closing early poverty-related gaps and enhancing developmental trajectories (Bassok, 2010; Dearing, McCartney, & Taylor, 2009; Geoffroy et al., 2010; Keys et al., 2013; Magnuson, Meyers, Ruhm, & Waldfogel, 2004; Peisner-Feinberg et al., 2001; Reynolds, Temple, Robertson, & Mann, 2001; Schweinhart & Weikart, 1997; Winsler et al., 2008).

Launched in 1965 as part of President Johnson's War on Poverty, the Head Start preschool program reflects a long-standing federal effort to compensate for social and economic inequalities and promote school readiness among low-income children through the provision of no-cost high-quality early education, health, and family well-being services. With annual appropriations authorized by congress, Head Start is administered by the Department of Health and Human Services (DHHS) Administration for Children and Families which awards federal grants to public agencies, school systems, non- and for-profit organizations, and tribal governments to support Head Start programming in localities across the nation. Since its inception, congressional appropriations for Head Start and corresponding enrollments have risen exponentially. To date, Head Start has served over 33 million children and their families, with over 8 billion federal dollars allocated to serve 1 million children in 2016 alone (U.S. DHHS, 2016a). Although we focus this chapter on 4-year-old children's prekindergarten year in the Head Start preschool program, extensions exist including Head Start serving 3-year-olds, Early Head Start (for infants, toddlers, and pregnant women), the American Indian and Alaskan Natives program, and the Migrant and Seasonal Head Start program (U.S. DHHS, 2016a).

Through multiple congressional reauthorizations, Head Start has evolved over time, with particular attention in recent years to improving program quality (e.g., aligning school readiness goals with state learning standards, raising teacher qualifications). Most recently, Head Start promoted more rigorous standards of effective teaching and expanded program duration with the goal of moving to a full-day, full-year model (U.S. DHHS, 2016b). There is some evidence these efforts have been successful. Compared to children who would otherwise attend non-center-based

care (e.g., home care), children attending Head Start have a significant academic advantage at school entry (Feller, Grindal, Miratrix, & Page, 2016; Kline & Walters, 2016), with children at the lower end of the skill distribution experiencing the greatest benefits (Bitler, Hoynes, & Domina, 2014).

Continuity in Children's Early Learning Experiences

Despite evidence of short-term benefits associated with Head Start and other preschool programming, there is little empirical evidence of longer-term impacts (Lipsey, Farran, & Hofer, 2015; Phillips et al., 2017; Puma et al., 2012). For example, documented patterns of "fade out" have been attributed in part to children's movement from higher-quality preschool classrooms to less supportive classrooms in later grades (Lee & Loeb, 1995). This has led stakeholders to seek strategies to help maximize and sustain the benefits of children's early education experiences, and consequently, better capitalize on public investments (Heckman & Masterov, 2007).

Indeed, a growing body of research points to continuity as a promotive factor in children's learning and development that may be especially beneficial to low-income children (Abry, Latham, Bassok, & LoCasale-Crouch, 2015; Bogard & Takanishi, 2005; Reynolds et al., 2010; Takanishi, 2010). Continuity can be defined as the similarity, complementarity, coordination, or sequencing of educational components from grade to grade and has been examined in intervention and nonintervention settings (Bogard & Takanishi, 2005). For example, model early education programs such as the Carolina Abecedarian Project and the Chicago Child-Parent Center and Expansion Program provided low-income children with purposefully sequenced curricula and comprehensive education services across early schooling. Children who attended programming for multiple years outperformed those who attended fewer years on measures of academic achievement (Campbell, Ramey, Pungello, Sparling, & Miller-Johnson, 2002; Reynolds & Temple, 1998).

Studies of naturally occurring variability in continuity have found similar support. For example, US children who experienced a full set of continuity features across the prekindergarten and early elementary years (e.g., following preschool with full-day kindergarten, low school mobility, advanced teacher certification, high levels of literacy and math instruction, and high levels of parent involvement) had better academic and school engagement outcomes, and fewer incidents of grade retention and special education placement compared to those experiencing only some or none of the features (Reynolds et al., 2010). Moreover, these effects were the most pronounced among low-income children. Studies of schools' use of preschool-to-kindergarten transition practices offer additional support for efforts to promote continuity. For example, children whose prekindergarten and kindergarten teachers met and shared information regarding individual children or curricular issues had higher ratings of social skills and lower ratings of problem behavior in kindergarten than children whose teachers did not engage in these

practices (LoCasale-Crouch, Mashburn, Downer, & Pianta, 2008). Although the underlying mechanism is unclear, such practices likely promote continuity in instruction and care.

Taken together, research evidence suggests that continuity in supportive learning experiences across early learning settings can be an effective lever to promote and sustain early developmental gains, particularly for economically disadvantaged children. Thus, findings that indicate generally low levels of naturally occurring consistency in children's schooling experiences are concerning. Researchers have documented notable differences from preschool to kindergarten including decreases in provisions for learning and amount of time spent in science, social studies, and free choice/centers, as well as increases in the amount of time spent in language/literacy, math, small groups, and whole groups (La Paro et al., 2009). In some cases, similar average ratings of classroom quality (i.e., emotional, organizational, and instructional) across years masked discontinuities in individual children's learning experiences (e.g., no more than 12% of children experienced the highest quality in both years). In sum, there is reason to expect marked discontinuity in individual children's experiences across prekindergarten and kindergarten settings, even when average levels suggest similarities across the two contexts.

Study Objectives and FACES Data

Although evidence indicates the unique importance of continuous supportive early learning experiences for children from economically disadvantaged families, there has not been a recent in-depth description of low-income children's learning experiences on either side of the prekindergarten to kindergarten transition. To address this gap, we describe the prekindergarten and kindergarten learning experiences of children attending Head Start, with an eye toward areas and patterns of continuity and change across the 2 years. We examine structure- and process-related elements of children's learning experiences that have documented links to school readiness and adjustment outcomes for low-income children and are part of the policy dialogue regarding early childhood education quality and accountability. As structural elements, we examine teachers' level of education and years of teaching experience, class size and teacher-child ratio, and length of school day (i.e., full-day/part-day). As process elements, we examine the frequency of literacy and math instruction, amount of recess/outdoor activities, parent satisfaction with school communication practices, and schools' transition practices. For each element, we describe average experiences in Head Start and kindergarten and child-level patterns of change utilizing data from the Head Start Family and Child Experiences Survey.

The Family and Child Experiences Survey (FACES) was launched by the Administration for Children and Families in 1997 to gather information on the characteristics, experiences, and development of Head Start children and families, as well as the characteristics of Head Start and kindergarten teachers and programs. Each of five FACES cohorts, recruited from across the USA every 2 years from

1997 to 2009, comprises a nationally representative sample of 3- and 4-year-old children (and their families, Head Start teachers, classrooms, centers, and programs) entering Head Start for the first time in the fall of their cohort year. Given our aim to provide the most current description possible of children's learning experiences as they transition from Head Start into kindergarten, we utilize the 2009 cohort and focus on 4-year-old children's experiences in their prekindergarten year directly preceding their entrance into kindergarten. For approximately half of children, this was their second year in Head Start because they entered as 3-year-olds. We used data collected in the fall and spring of the prekindergarten year (reported by Head start teachers, center directors, and parents) and at the end of the following kindergarten year (reported by kindergarten teachers and parents). When describing sample characteristics and average experiences, we report results at the level of data collection (typically teacher/classroom) and employ weights to provide nationally representative estimates. When describing patterns of change across years, we report results at the child-level for those children who had data at both time points (these results are unweighted, as there is not a recommended weight available for these comparisons). Detailed information on FACES design, methodology, and instrumentation is available at https://www.acf.hhs.gov/opre/research /project/head-start-family-and-child-experiences-survey-faces.

In total, we describe the learning experiences of 2331 children (50% female), as reported by their Head Start teachers (n = 468), center directors (n = 129), and kindergarten teachers. The 2009 cohort was evenly split between children that entered the FACES data collection at 3 or 4 years of age (M age = 47 months; range = 32–60 months). Most children in the sample identified as Hispanic/Latino (39%), followed by African-American, non-Hispanic (32%) and White, non-Hispanic (21%). Head Start and kindergarten teachers were almost all female (99% and 98%, respectively) and of similar ages (Head Start M = 41 years, SD = 11; kindergarten M = 42, SD = 11). Head Start teachers were primarily White, non-Hispanic (55%) and African-American (32%), with 20% reporting Hispanic/Latino ethnicity. Kindergarten teachers were primarily White, non-Hispanic (82%) and African-American (11%), with 14% reporting Hispanic/Latino ethnicity.

Head Start Children's Prekindergarten and Kindergarten Learning Experiences

Teacher Education and Years of Teaching Experience Current Head Start standards require at least half of lead teachers nationally to have a bachelor's degree or above in early childhood education (or related field with preschool teaching experience; U.S. DHHS, 2007), with recent nationwide estimates at 55% (Bassok, 2013). Standard eligibility requirements for public kindergarten teachers are a bachelor's degree, usually in early childhood or elementary education, but nearly half of US public elementary school teachers have obtained a master's degree (U.S. Department of Education, National Center for Education Statistics, 2011–2012a).

In our sample, less than one-half of children's Head Start teachers had obtained a bachelor's (36%) or a master's (11%) degree (the remaining 53% having obtained an associate's degree or less). Contrastingly, all of children's kindergarten teachers had obtained either a bachelor's (49%) or master's (51%) degree. At the child-level, 49% of children had a teacher with at least a bachelor's degree in both Head Start and kindergarten. Not surprisingly, discontinuity was most often reflected as an increase in teacher education from Head Start to kindergarten (73% of children). Only 2% of children experienced a decrease in teacher education (Table 1). Patterns differed slightly in regard to teachers' experience. On average, children's Head Start and kindergarten teachers had similar years of teaching experience (13 and 14 years, respectively). However, there was notable discontinuity for individual children (Table 1), with numbers split across children moving into kindergarten classrooms with more experienced teachers (45% of children), less experienced teachers (36% of children), and those experiencing no substantive change (20% of children). Just over one-third of children had a teacher with 10 or more years of teaching experience in Head Start and kindergarten.

Class Size and Teacher-Child Ratio Head Start mandates a maximum class size of 20 children and maximum teacher-child ratio of 1:10 (U.S. DHHS, 2016b). Class size and ratio limits in the public elementary school system are much less consistent. Specifically, only about one-half of the USA specify a class size limit and fewer specify a teacher-child ratio standard (Education Commission of the States, 2009, 2014; U.S. Department of Education, 2011–2012b).

Findings from our sample appeared to reflect this inconsistency. On average, Head Start children's class sizes and teacher-child ratios increased from prekindergarten to kindergarten. Class size increased by an average of 4 children, from 17 children per classroom in prekindergarten to 21 per classroom in kindergarten. Additionally, the average teacher-child ratio increased by five children per teacher, from 1:8 in prekindergarten to 1:13 in kindergarten. In terms of continuity for individual children (Table 1), 49% of children attended a classroom of 20 children or less in both prekindergarten and kindergarten, and 36% attended a classroom with a teacher-child ratio of 1:10 or less in both years. Discontinuity was, as expected, most often reflected in an increase from prekindergarten to kindergarten in class size (57% of children) and teacher-child ratio (62% of children).

Program Day Length (Full-Day/Part-Day) A substantial number of children attend part-day programs in one or both of their prekindergarten and kindergarten years. National estimates indicate that 63% of Head Start programs provide full-day programming (Walters, 2015), whereas 70% of children are in full-day kindergarten classrooms (U.S. DOE NCES, 2017).

Indeed, in our sample, 57% of Head Start teachers reported full-day programming. The remaining teachers reported they worked in either part-day (39%) or home-based programs (4%). This variability decreased substantially when looking at kindergarten classrooms, in which the percentage of teachers reporting full-day programming grew to 88%. In terms of continuity for individual children, 55% of

Table 1 Child-level changes in learning experiences from Head Start to kindergarten

	Percent of children (N = 1590–1711):		
	Bachelor's degree or above in HS and K	Decreasing from HS to K	Increasing from HS to K
Teacher level of education	49	2	73
	10 or more years in HS and K		
Years of teaching experience (raw)	36	43	53
Years of teaching experience (categorical)	32	36	45
	20 or less in HS and K		
Class size	50	8	57
	10:1 or less in HS and K		
Teacher-child ratio	36	7	62
	Full-day in HS and K		
Program day length (half/part-day)	55	3	33
Literacy topics	*Taught every day in HS and K*		
Letter names	66	12	19
Writing letters	49	16	28
New words	55	17	22
Phonics	60	4	33
Listen to stories with print	68	19	10
Listen to stories, no print	11	20	50
Retell stories	14	31	24
Print conventions	56	14	24
Write name	81	2	16
Rhyming words/word families	18	21	37
Common prepositions	13	39	20
Math topics			
Count out loud	77	12	9
Geometric manipulatives	13	61	9
Counting manipulatives	24	42	15
Math-related games	16	41	19
Measuring instruments	2	64	11
Calendar-related activities	76	4	19
	More than 30 min in HS and K		
Daily recess/outdoor time	7	67	10
Communication practices (satisfaction)	*Done very well in HS and K*		
Reports on child	74	13	11

(continued)

Table 1 (continued)

	Percent of children (N = 1590–1711):		
	Bachelor's degree or above in HS and K	Decreasing from HS to K	Increasing from HS to K
Provides developmental information	64	21	11
Communicates chances to volunteer	67	15	14
Provides home-learning information	67	17	11
	Four or more offered in HS and K		
Transition practices offered (number of)	28	92	3

Head Start children were enrolled in a full-day program in both their prekindergarten and kindergarten years, whereas 10% were enrolled in a part-day program both years (Table 1). About one-third of children moved from part-day prekindergarten to full-day kindergarten, and a small contingent (3% of children) moved from full-day prekindergarten to part-day kindergarten.

Frequency of Literacy and Math Activities Over time, both Head Start and kindergarten classrooms have seen a shift in instructional focus toward academic skills. For Head Start, this shift was motivated by the Head Start Act of 2007, which raised academic standards alongside standing goals to support social-emotional and physical development (U.S. DHHS, 2007). For kindergarten classrooms, the shift has involved a gradual academicization over the last 20 years in which teachers have increased the amount of time spent on advanced language/literacy and math topics and activities (Bassok et al., 2016). In this light, expectations regarding (dis)continuity in children's literacy and math experiences were less clear than teacher qualifications and class size, for example.

Literacy With literacy, we found that for most topic/activity areas, the majority of Head Start teachers reported engaging in *daily* literacy instruction (M = 62%; range = 26–88%; Fig. 1). In kindergarten the percent of teachers reporting daily frequency trended even higher (M = 67%; range = 27–97%), indicating that on the whole, children had *more frequent* exposure to these literacy topics/activities once in kindergarten. The literacy activities with the largest increases of teachers reporting every day frequency from Head Start to kindergarten tended to be more advanced concepts including *listening to stories without print exposure* (73% increase), *phonics* (37% increase), and *rhyming words* (32% increase). The exceptions in which more Head Start than kindergarten teachers reported daily instruction were *common prepositions* (41% decrease) and *retelling stories* (24% decrease).

As hypothesized, many children experienced consistency in the frequency of literacy instruction across years, and in many cases it was consistent daily exposure (Table 1). Averaging across the 11 topics, 45% of children experienced daily literacy

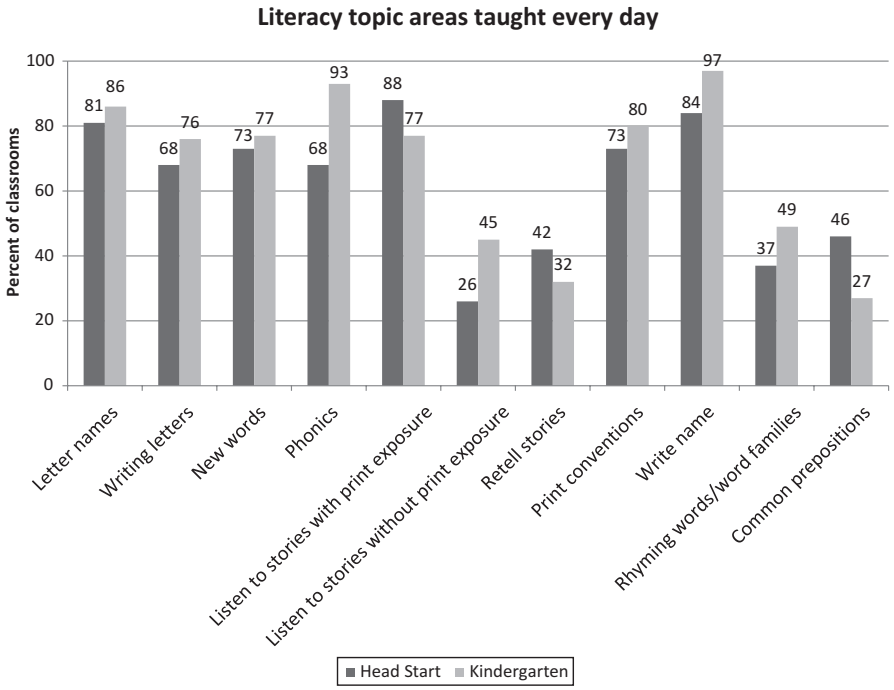

Fig. 1 Percent of teachers reporting daily instruction of literacy topic areas in Head Start and kindergarten

instruction in prekindergarten and kindergarten (range = 11–81%). The topic areas with the highest percentage of children experiencing daily frequency in both years were *write name* (81% of children), *listen to stories with print exposure* (68% of children), and *letter names* (66% of children). Topic areas with the least children experiencing consistency in daily frequency were *listen to stories with no print exposure* (11% of children), *common prepositions* (13% of children), and *retell stories* (14% of children). Instances of inconsistency were more commonly seen in increases rather than decreases in instructional frequency from Head Start to kindergarten, with the greatest number of children experiencing increases in *listening to stories without print exposure* (50% of children) and *rhyming words* (37% of children). Three exceptions in which more children decreased than increased in frequency were *common prepositions* (39% of children), *retell stories* (31% of children), and *listen to stories with print exposure* (19% of children).

Math The patterns observed for math instruction paint a different picture (Fig. 2). Like literacy, a substantial percentage of Head Start teachers reported daily instructional frequency of math topics (M = 67%; range = 39–91%). However, unlike literacy, the percentage of kindergarten teachers reporting daily math instruction was typically lower (M = 46%; range = 5–95%), indicating that on average, children had *less frequent* exposure to these math topics/activities once in kindergarten. The math

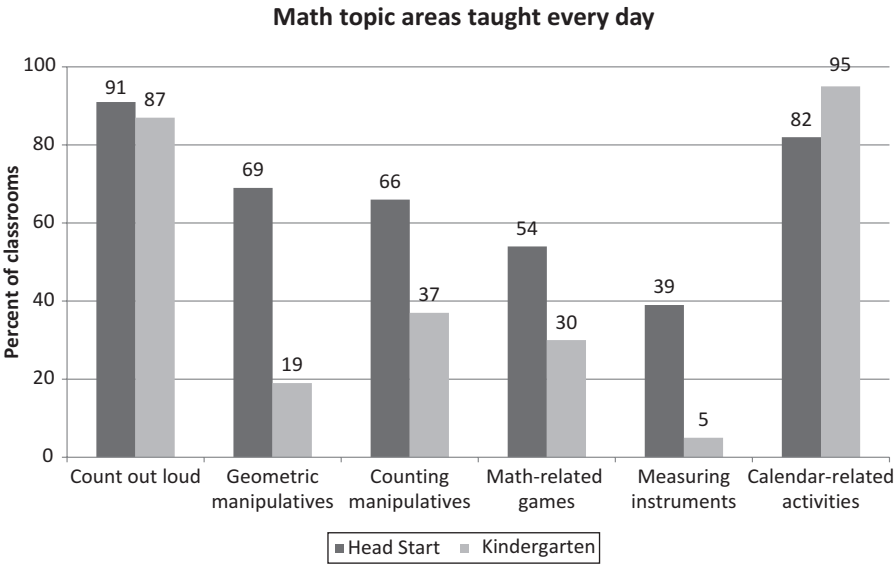

Fig. 2 Percent of teachers reporting daily instruction of math topic areas in Head Start and kindergarten

activities with the largest decreases in the number of teachers reporting daily instructional frequency were *measuring instruments* (87% decrease), *geometric manipulatives* (72% decrease), *counting manipulatives* (44% decrease), and *math-related games* (44% decrease). The one exception in which more kindergarten than Head Start teachers reported daily instruction was *calendar-related activities* (16% increase).

Compared to literacy, fewer children experienced daily math instruction across years (Table 1). Averaging across six math topic areas, 35% of children experienced daily math instruction each year (range = 2–77%). The two topic areas in which the most children experienced daily instruction in both years were *count out loud* (77% of children) and *calendar-related activities* (76% of children). The remainder of the topic areas provided a stark contrast with only 2% (for *measuring instruments*) to 24% (for *counting manipulatives*) of children experiencing daily math instruction in both years. Instances of change across years were most commonly observed as decreases rather than increases in instructional frequency from prekindergarten to kindergarten, with the greatest percentage of children experiencing decreases in *measuring instruments* (64% of children) and *geometric manipulatives* (61% of children). The one exception in which more children increased than decreased in frequency was *calendar-related activities* (19% increasing of children).

Recess Specific guidelines for preschoolers and elementary-aged children proposed by the US DHHS and supported by the National Association for the Education of Young Children advocate at least 60 min per day of structured physical activity

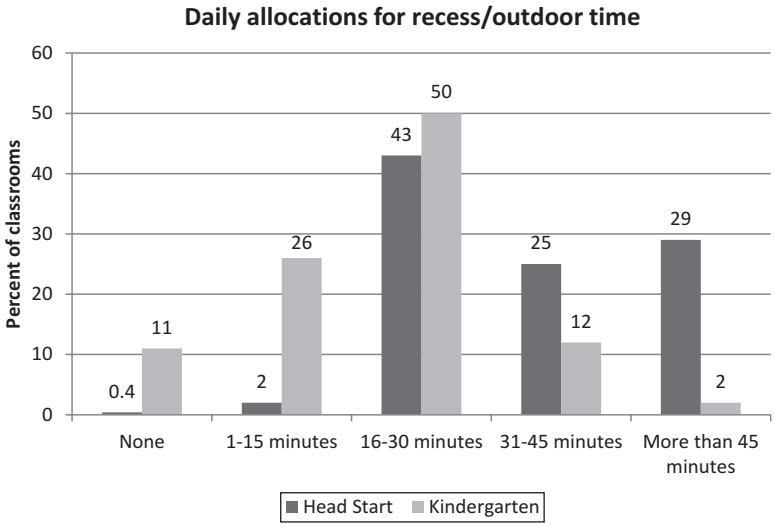

Fig. 3 Daily recess/outdoor time allocations in Head Start and kindergarten

and between 60 and 180 min per day in unstructured physical activity (Society of Health and Physical Educators, 2016). Additionally, it is recommended that all elementary children be provided with at least one daily recess period of at least 20 min (National Association for Sport and Physical Education, 2006). Indeed, Head Start highlights physical development and health as one of the essential domains of school readiness included in its Child Development and Early Learning Framework, and recess appears common in US kindergarten classrooms, with the majority of kindergarten teachers reporting that their children typically have daily recess (Bassok et al., 2016). This information suggests that children may have daily allocations for recess in Head Start and kindergarten, but does not indicate how much daily time is being allotted, thus making it difficult to anticipate specific patterns of (dis)continuity across the two contexts.

We found that almost all Head Start teachers reported some daily recess/outdoor allowance in prekindergarten (Fig. 3), with 98% of teachers reporting more than 15 min per day spent in recess/outdoor time and 54% reporting more than 30 min per day. In kindergarten, fewer teachers (89%) reported some daily recess/outdoor time, and the distribution of allocated time shifted substantially: Approximately 64% of teachers reported more than 15 min per day spent in recess/outdoor time, and only 14% reported more than 30 min. The most dramatic shifts were in the *none* category (2,650% increase), *1–15 min* range (1,200% increase), *more than 45 min* range (93% decrease), and *31–45 min* range (52% decrease). At the child-level, there was relatively little consistency across years (Table 1). Only 7% of children experienced more than 30 min of daily recess in both prekindergarten and kindergarten. Discontinuity was most often reflected in a decrease in recess time from

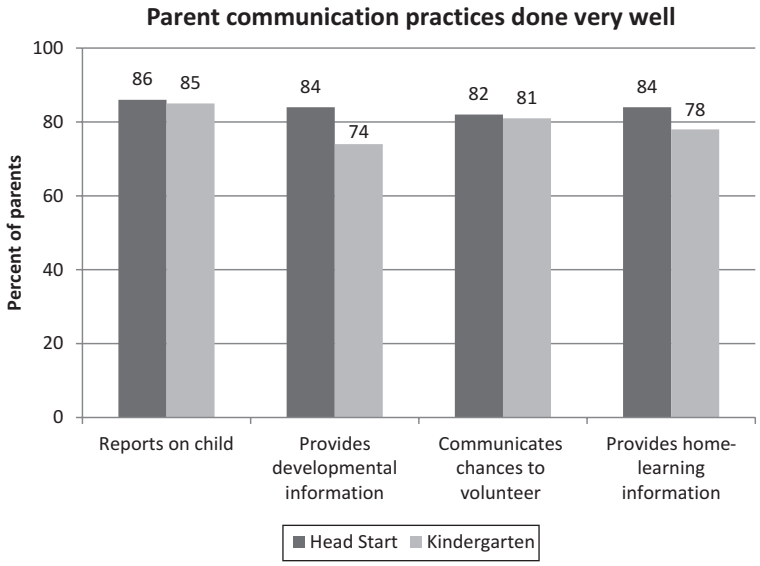

Fig. 4 Percent of parents who report highest level of satisfaction with school communication practices in Head Start and kindergarten

Head Start to kindergarten, with 67% of children moving to a kindergarten classroom with less recess/outdoor time and only 10% moving to a classroom with more recess/outdoor time.

Parent Communication and Transition Practices Head Start Performance Standards outline provisions for family engagement and school transition services (U.S. DHHS, 2016b). These efforts appear successful in that Head Start has demonstrated higher levels of parent involvement compared to other preschool programs (Fantuzzo, Tighe, & Childs, 2000; Rimm-Kaufman & Pianta, 1999). Parents continue to report high levels of interest in their children's education and development across the transition into kindergarten (McIntyre, Eckert, Fiese, DiGennaro, & Wildenger, 2007); however, the frequency of school-family communication appears to decrease once in formal schooling (Rimm-Kaufman & Pianta, 1999), and kindergarten teachers tend to utilize low-intensity and non-child-specific transition practices (e.g., sending flyers home, holding group open houses) to a greater extent than in-person or individualized practices shown to be more effective (e.g., home visits, phone calls; Pianta, Cox, Taylor, & Early, 1999; Schulting, Malone, & Dodge, 2005).

Parent Communication We found that parents' average satisfaction with school communication practices was quite high in both Head Start and kindergarten, with the majority of parents in each year reporting practices as done very well (Fig. 4). In Head Start, no fewer than 82% of parents stated a given practice was done very

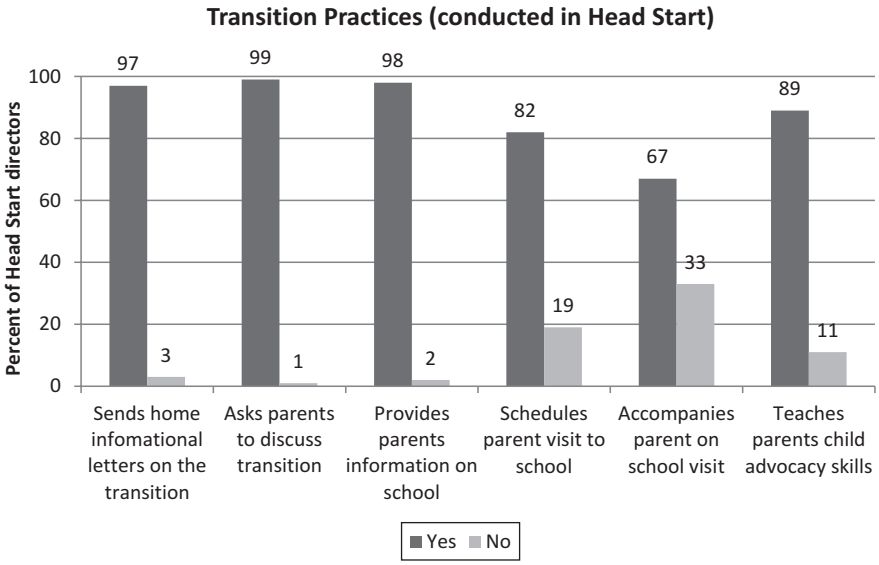

Fig. 5 Percent of Head Start center directors reporting use of kindergarten transition practices

well. This number dropped slightly in kindergarten to 74%. Although modest, changes from Head Start to kindergarten reflected a decrease in the number of highly satisfied parents across the transition, with the largest decreases in *provides developmental information* (12% decrease) and *provides home-learning information* (7% decrease). Given the high average ratings in each year, high levels of consistency for individual parents were not entirely surprising (Table 1). Averaging across the four practices, 68% of parents reported the highest level of satisfaction in both Head Start and kindergarten (range = 64–74%). Looking at changes from Head Start to kindergarten, more parents decreased than increased in their satisfaction with school communication practices; however, satisfaction levels were quite similar across the 2 years.

Transition Practices Head Start center directors reported offering a variety of kindergarten transition practices designed to support families as they move from Head Start to elementary school. Averaging across six practices, 89% of directors reported their use in their Head Start center (range = 67–99%; Fig. 5). Practices with the highest reported use included *invites parents to discuss the transition* (99%), *provides parents with information on the school their child will attend* (98%), and *sends home informational letters on the transition* (97%). The least utilized practice was *accompanying parents/children to visit the school* (67%).

Compared to Head Start center directors, kindergarten teachers reported engaging in fewer transition practices. Averaging across six practices, 50% of teachers reported use in their school (range = 5–87%; Fig. 6). Among the practices most

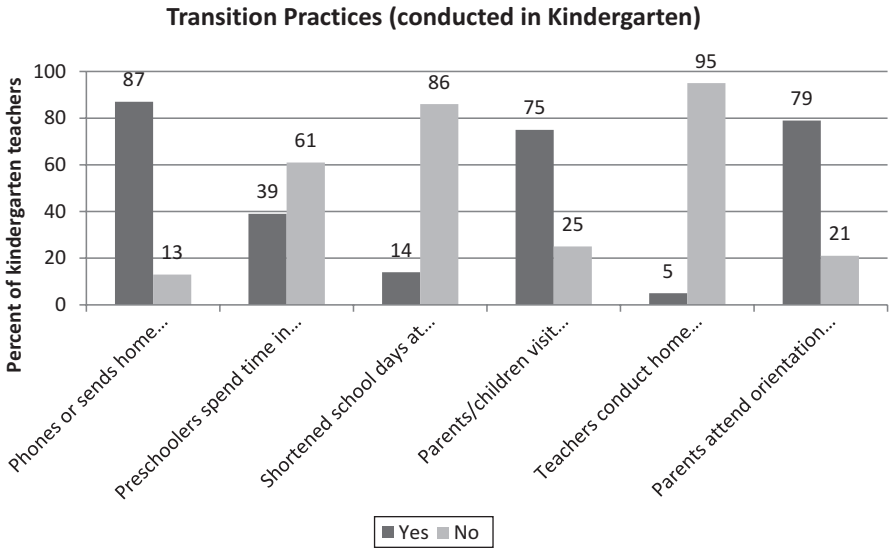

Fig. 6 Percent of kindergarten teachers reporting use of kindergarten transition practices

commonly utilized were *phones/sends home information on the kindergarten program* (87%), *parents attend orientation prior to school start* (79%), and *parents/children visit prior to school start* (75%). The least reported practices were *teachers conduct home visits at the beginning of the year* (5%) and *school days shortened at the beginning of the year* (15%).

Because Head Start center directors and kindergarten teachers reported on the use of different transition practices, a direct comparison of the availability of these practices across Head Start and kindergarten is not possible. Instead, we calculated the sum of transition practices available to children and families in each year and compared these numbers (Table 1). On average, children/families in Head Start had reported access to 5.26 transition practices compared to 2.84 in kindergarten. Just over one-quarter of children/families (28%) had access to four or more transition practices in prekindergarten and kindergarten. The overwhelming majority of children/families (92%) experienced a decrease from Head Start to kindergarten in the number of transition practices offered.

Making Sense of Patterns in Head Start Children's Learning Experiences

Our findings paint a detailed picture of structural and process-oriented elements of prekindergarten and kindergarten learning experiences for a nationally representative sample of low-income children who attended Head Start. This picture includes

elements of variability in children's learning experiences within the prekindergarten and kindergarten years, as well as notable discontinuity across the school transition, with few examples of stability emerging. Unpacking these findings, patterns of inconsistency between Head Start and kindergarten classrooms were split between those suggestive of more supportive experiences in Head Start and those suggestive of more supportive experiences in kindergarten. We discuss these findings in light of the ongoing dialogue on how best to support low-income children's school readiness and adjustment across the transition from Head Start into formal schooling.

Continuity in Early Learning Experiences The most consistent element of children's learning experiences was parent satisfaction with school communication practices. Parents' high level of satisfaction with communication during prekindergarten was not surprising given Head Start's emphasis on parent engagement and support. However, similarly high levels of satisfaction in kindergarten, although promising, were not expected given fewer guidelines and standards for parent communication and lower levels of individualized contact within the elementary school system (Pianta et al., 1999). Although we cannot know parents' level of responsiveness to school communication efforts, their high levels of satisfaction with communication practices in Head Start and kindergarten are heartening and suggest positive connections between home and school likely to benefit children (LoCasale-Crouch et al., 2012).

Discontinuity in Early Learning Experiences The remaining elements of children's early learning experiences indicated aspects of discontinuity across the transition to school, with some patterns highlighting strengths of Head Start classrooms and others the strengths of kindergarten classrooms. Particularly in the case of class size and teacher-child ratio, math instruction, recess/outdoor time, and use of kindergarten transition practices, Head Start experiences appeared better aligned with developmental recommendations, whereas for teachers' level of education and years of teaching experience, length of school day, and literacy instruction, kindergarten classrooms evidenced more supportive experiences. More discussion about these patterns is provided below.

Strengths of Head Start Classrooms

Class Size and Teacher-Child Ratio The majority of children experienced an increase from Head Start to kindergarten in their class size and the number of children per teacher. Class size and teacher-child ratio have garnered much attention from policymakers given a robust body of evidence linking smaller preschool class sizes and teacher-child ratios to more supportive teacher-child interactions and better overall classroom quality, as well as academic and social-emotional gains in children (Howes, Phillips, & Whitebook, 1992; Munton et al., 2002; NICHD ECCRN, 1999, 2000; Phillipsen, Burchinal, Howes, & Cryer, 1997). Small class

sizes appear to have the greatest impact for lower-SES children and when introduced in earlier grades (Finn & Achilles, 1990), findings which support Head Start regulations regarding class size and teacher-child ratios. Moreover, children who attend small classes throughout early schooling sustain benefits even after matriculating into larger classes in later grades (Mosteller, 1995). Our findings suggest that Head Start is more effectively maintaining class sizes and ratios likely to best support early learning and development and that larger kindergarten classrooms with fewer teachers are a source of discontinuity in children's early school experiences that may undercut benefits attributable to smaller, better-staffed Head Start classrooms.

Math Instruction The overall decrease from Head Start to kindergarten in the frequency of math instruction was somewhat alarming. Time spent in academic learning in preschool and kindergarten is a direct predictor of academic performance (Croninger, Rice, Rathbun, & Nishio, 2007; Guarino, Hamilton, Lockwood, & Rathbun, 2006), and early math skills predict not only later math achievement but also language/literacy, science, and grade promotion (Claessens & Engel, 2013; Duncan et al., 2007). Outside of counting out loud and calendar-related activities, a substantial number of children experienced a decrease in instructional frequency once in kindergarten. Decreases were most evident in more advanced activities like measuring and geometric manipulatives which one might presume to garner more attention in kindergarten rather than less. This trend is consistent with findings that kindergarten teachers spend a substantial amount of time on basic concepts that most children have already mastered even though it does little to promote math learning and may even have negative implications (Claessens, Engel, & Curran, 2014; Engel, Claessens, Watts, & Farkas, 2016). Although we cannot extrapolate from frequency ratings the total amount of time spent on math topics, the quality of instruction, or children's engagement during instruction, the patterns of decreased instructional frequency and potential emphasis on more basic concepts in kindergarten highlight an area of discontinuity that is counter to empirically supported developmental practices.

Recess/Outdoor Time The amount of daily recess/outdoor time allocated in Head Start compared to kindergarten provided one of the starkest contrasts among the learning experiences examined. Overall, daily allowances were higher in Head Start than in kindergarten, and nearly three-quarters of children experienced less recess time once in kindergarten. Still, in neither context did average daily allowances meet recommendations endorsed by the National Association for the Education of Young Children of 60–180 total minutes of physical activity per day, and over one-third of kindergarten classrooms fell short of the recommendation for schools' provision of at least one daily 20-min recess period. Recess is an important component of young children's learning contexts, as it provides opportunities for physical activity and play with documented physical, psychological, cognitive, social, and behavioral benefits (Barros, Silver, & Stein, 2009; Jarrett et al., 1998; Pellegrini & Bohn, 2005; Timmons, Naylor, & Pfeiffer, 2007). The transition to kindergarten typically

marks children's initiation into a more formal and structured learning environment with a greater emphasis on academic instruction compared to preschool. Our findings suggest that children are spending less time in recess and outdoor activities at a time when such activities may be critical in helping children expend physical energy and build social relationships that may help them better adjust to the new demands introduced by formal schooling.

Transition Practices More practices designed to help parents and children navigate the transition to kindergarten were available in Head Start compared to kindergarten, resulting in a stark decrease in the number of supports offered in kindergarten, and only a small proportion of children/families being afforded four or more transition practices in both years. Transition practices have garnered increased attention in recent decades as the school readiness paradigm has expanded to encompass the goal of ensuring that schools are ready for children (in addition to children being ready for school; National Education Goals Panel, 1997). Schools' use of transition practices is useful toward both objectives and has been shown to aid in children's adjustment to formal schooling (LoCasale-Crouch et al., 2008; Schulting et al., 2005). Our results indicated that home visits, shortened school days at the beginning of the year, and prekindergarten children spending time in the kindergarten classroom were among the practices least likely to be offered in kindergarten. This is consistent with findings that transition practices that are individualized and take place prior to the start of the school year are among those least frequently employed by kindergarten teachers even though they may provide the greatest source of support and benefit to parents and children (LoCasale-Crouch et al., 2008; Pianta et al., 1999). Although we cannot discern parents' uptake of or satisfaction with schools' transition practices, the diminished offerings in kindergarten compared to Head Start suggest decreasing support for parents and children after leaving their Head Start center.

Strengths of Kindergarten Classrooms

Teachers' Level of Education and Years of Experience Nearly three-quarters of children experienced an increase in their teacher's level of education from Head Start to kindergarten, and about one-half experienced an increase in their teacher's years of experience. These patterns are likely due in part to Head Start regulations that require only half of the national teacher workforce to have at least a bachelor's degree. Although research on the importance of teacher education and experience for children's outcomes has been mixed, a body of evidence exists linking teacher education and experience to children's academic and social skills both directly and indirectly (Connor, Son, Hindman, & Morrison, 2005; Croninger et al., 2007; Howes et al., 1992; Kini & Podolsky, 2016; La Paro et al., 2009; Mashburn et al., 2008; NICHD ECCRN, 2002a, 2002b; Zill et al., 2003). Moreover, recent evidence suggests that having a teacher with 15 years of experience (versus 5) can equate to

2 months of additional learning (Papay & Kraft, 2015). Even though the educational attainment of Head Start teachers is trending upward and currently exceeds 50% of teachers with a bachelor's degree (Bassok, 2013), geographic disparities in Head Start teacher education will likely remain. Although having more educated or more experienced teachers is not sufficient to establish positive developmental trajectories, efforts to systematically increase Head Start teacher education to match that of the kindergarten teacher workforce, and to retain teachers in both Head Start and kindergarten, would decrease discontinuity and likely serve to bolster early learning outcomes for children.

Length of School Day Approximately half of Head Start children attended full-day, but by kindergarten nearly 90% were attending a full-day program, with one-third of the sample moving from part- to full-day classrooms across the transition. Advocates of full-day programming tout increased instructional exposure as well as benefits to parents who may have more latitude to seek employment or continuing education when their children spend more hours per day in school (Barnett & Frede, 2010). Full-day programming may be especially beneficial for low-income children for whom additional hours of weekly program attendance has predicted reading and math gains (Loeb, Bridges, Bassok, Fuller, & Rumberger, 2007), as well as improved social-emotional competencies when in the context of high-quality programming (Reynolds et al., 2014). As such, Head Start's planned transition toward full-day, full-year programming may, under certain conditions, help bolster kindergarten readiness. Further, for many Head Start children, it will lead to greater similarity between prekindergarten and kindergarten in the number of hours per day they spend in the classroom. Even though the prekindergarten and kindergarten school days differ in many ways, a longer Head Start day would mean one less element of change across the transition to kindergarten to which children have to acclimate.

Literacy Instruction As with math instruction, children experienced relatively high frequencies of literacy instruction in prekindergarten. Unlike, math however, these frequencies more often remained stable or increased once in kindergarten. The amount and type of literacy instruction to which preschool children are exposed have predicted growth in specific foundational skills including letter-recognition and vocabulary, as well as overall reading achievement (Claessens et al., 2014; Connor, Morrison, & Slominski, 2006; Lonigan & Shanahan, 2009). Looking across 11 literacy topic areas, with a few exceptions, more children experienced an increase than a decrease in instructional frequency. Observed inconsistencies appeared to reflect kindergarten teachers' emphasis on more advanced topics, in that the largest number of children experienced increases in the areas of listening to stories without seeing print, rhyming words/word families, and phonics, whereas fewer children experienced increases in basic concepts such as name writing and letter names. This bodes well for children given research indicating that even young children from economically disadvantaged backgrounds or who may be lagging behind in early learning skills can benefit from exposure to more advanced literacy instruction (Claessens et al., 2014). Despite a generally positive picture of literacy experiences

in Head Start and kindergarten, several topic areas including retelling stories, rhyming words/word families, and common prepositions were taught less frequently in both classrooms, pointing to potential gaps in children's exposure to certain types of literacy instruction.

Looking Forward

Findings highlight strengths of children's Head Start and kindergarten experiences while revealing areas of discontinuity across the transition that may be targeted to bolster Head Start children's school readiness and adjustment. These patterns also speak to the role of policy in promoting high-quality early learning experiences for low-income children across preschool and kindergarten years. For example, Head Start's ongoing program and performance revisions reflect a unique flexibility to respond to research and recommendations for developmental best practices toward the goal of maximizing program impact for low-income children and families. Evidence-informed changes are currently underway (e.g., increasing program hours and teacher qualifications, expanding quality rating improvement systems) that are certain to shift the landscape of the Head Start experience for children and are likely to result in heightened continuity across their prekindergarten and kindergarten experiences. Systematic changes are likely to be slower within the much larger and less-centralized public K-12 elementary system meaning that Head Start may be the stronger change agent. As economic gaps widen, the identification of effective ways to help set low-income children on a path toward academic success and well-being will become increasingly central to national interests. More research and translational efforts are needed to better understand the state of children's early educational experiences and the conditions under which convergent or divergent experiences relate to short- and long-term development and to integrate this knowledge into effective policy and practice.

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Changes in School Readiness of America's Entering Kindergarteners (1998–2010)

Scott Latham

Abstract This chapter documents changes in school readiness among entering kindergarteners across the years 1998–2010, a period characterized by dramatic changes to the early childhood landscape. I use a broad definition of school readiness that includes not only academic skills such as reading and math knowledge but also social and emotional skills and physical health. The most striking changes over time are large increases in children's math and literacy proficiency. These gains were even larger among low-income and black children, suggesting that early income and race-based achievement gaps have narrowed over time. However, this chapter also documents some concerning trends over time. Children's self-control and their approaches toward learning got worse across this period. Children were also more likely to be obese or overweight in 2010 than in 1998. These increases were largest among low-income and minority children, so racial/ethnic and income-based gaps in obesity have gotten larger. Taken together, the evidence suggests that children's school readiness has improved in some ways and declined in others across the years considered. Implications for policy and practice are discussed.

Over the past few decades, a large body of evidence has demonstrated that early childhood is a crucial period of development. This period is a particularly malleable time in the life course, and in many ways it sets the stage for what will follow. Indeed, children's skills and abilities in early childhood are predictive of outcomes well into the future, including school achievement, college attendance, home ownership, earnings, and retirement savings (Chetty et al., 2011; Heckman, 2006; Shonkoff & Phillips, 2000). For these reasons, the skills that children have when they enter the kindergarten classroom can have important consequences for their long-term development.

However, by the time children arrive in kindergarten, large skill gaps based on race/ethnicity and income have already developed. At kindergarten entry, white children demonstrate significantly better skills in literacy and math than black or Hispanic children (Reardon, Robinson-Cimpian, & Weathers, 2015). The highest-income children outperform the lowest-income children by an even wider margin.

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Income-based achievement gaps have grown considerably over the past 50 years, and achievement gaps between the highest- and lowest-income children are now nearly twice as large as those based on race or ethnicity (Reardon, 2011). Gaps that develop early in life tend to persist as children proceed through school, as children who lag initially tend to remain behind (Fryer & Levitt, 2004; Reardon, 2011).

Although differences between students based on race/ethnicity and income are often framed as "achievement gaps," there are also important gaps in student behavioral skills at kindergarten entry. For instance, black and Hispanic children exhibit poorer attention skills than white children, and black children also exhibit disproportionately higher levels of disruptive behavior. Low-income children are more likely to exhibit conduct and hyperactivity problems than higher-income children (Duncan & Magnuson, 2011; Waldfogel & Washbrook, 2011). These differences in behavior can have negative consequences for low-income and minority students, because nonacademic skills affect school success both directly and indirectly (Heckman, 2006).

The persistence of early skill gaps, and the growing understanding of the importance of early childhood in the life course, has led to a sharp recent increase in public support for early childhood education (Barnett et al., 2016). Given this substantial recent investment, it is useful to examine whether and how much children's school readiness has improved across this time period. The present chapter aims to address this question through three key tasks: (1) providing a comprehensive definition, both theoretical and operational, of school readiness, (2) documenting changes in school readiness across two nationally representative samples of entering kindergarteners in the USA from 1998 to 2010, and (3) highlighting how race/ethnicity and income-based gaps in school readiness have changed across the same period. In providing this descriptive snapshot of how kindergarten readiness has changed over time, I draw on both extant research and original analysis. Importantly, I do not aim to identify the underlying causes of changes over time. However, in the final section, I provide some context for the changes documented and speculate on potential causes.

Defining "School Readiness"

School readiness is a complex and multidimensional concept that teachers, parents, researchers, and policymakers have debated about how best to define and measure for decades (Blair, 2002; Carlton & Winsler, 1999; Mashburn & Pianta, 2006; Meisels, 1998). A growing body of literature argues that school readiness occurs not just as a function of children's skills and knowledge but as an interplay between children, schools, parents, and communities. With the acknowledgement that parents, schools, and communities play an important role in determining whether children thrive in school, this chapter focuses exclusively on the skills and knowledge that children bring to the classroom and how those skills have changed over a 12-year period from 1998 to 2010. The chapter will focus on the following five

broad domains of kindergarten readiness, first outlined in the 1995 National Education Goals Panel (Kagan, Moore, & Bredekamp, 1995):

1. Social and emotional development
2. Approaches toward learning
3. Language and literacy
4. Cognition and general knowledge (including math and science)
5. Physical well-being and development

These domains have served as a template for state standards across the country (Scott-Little, Kagan, & Frelow, 2006) as well as the recently adopted Head Start Early Learning Standards (US Dept. of Health & Human Services, 2015). Importantly, they do not cover *all* areas in which we might want children to excel. For instance, parents, educators, or society at large may place high value on such things as art, music, creativity, or morality (Snow & Van Hemel, 2008). Further, these skills should not be thought of as a prerequisite for success in kindergarten. In fact, often the children that could benefit most from educational instruction are those that might be deemed "not ready" by a score on a specific assessment (Meisels, 1998). Despite these limitations, documenting changes over time along these domains at school entry allows for an examination of how children's skills and attributes have changed across a period characterized by intense interest and investment in early childhood.

To summarize recent changes in school readiness, this chapter synthesizes findings from three recent articles, all of which use data from two kindergarten cohorts of the Early Childhood Longitudinal Study (ECLS-K) (Bassok & Latham, 2017; Latham, Bassok, Finch, Reardon, & Waldfogel, 2017; Reardon & Portilla, 2016). The two ECLS-K studies used multistage sampling designs to achieve nationally representative samples of children entering kindergarten in 1998 and 2010, respectively. Both studies include information about all five of the school readiness domains outlined above (Hair, Halle, Terry-Humen, Lavelle, & Calkins, 2006), collected in the fall of the kindergarten year. The similarity in both study design and assessments used in the two ECLS-K cohorts provides an opportunity to examine how the skills of kindergarteners across the nation have changed across this 12-year period.

Documenting Changes in School Readiness from 1998 to 2010

In the following sections, I describe each of the five domains of school readiness in more detail. I explain why each is important, outline the measures that are available in the ECLS-K datasets, and describe how kindergarteners compare on each of these domains across the two cohorts. The results across all five domains are summarized in Tables 1, 2, 3, and 4. Table 1 presents changes over time in *levels* of student outcomes for all students. Tables 2 and 3 show changes over time in levels separately by race/ethnicity and by income. Table 4 shows changes over time in race/ethnicity and income-based *gaps*. I include the same outcomes across tables where possible, but in some cases identical measures were not available due to differences across studies.

Table 1 Changes in school readiness at kindergarten entry (1998–2010)

Domain	1998	2010	Change
Social and emotional development			
% poor self-control	15.3	16.7	1.4***
% poor interpersonal behavior	16.9	16.1	−0.8
% high externalizing behavior	13.3	12.8	−0.5
% high internalizing behavior	11.7	9.1	−2.6***
Approaches toward learning			
% poor approaches toward learning	17.4	22.8	5.4***
Language and literacy			
Teacher-reported literacy skills			
% high proficiency	21.4	25.6	4.2***
% low proficiency	57.2	48.7	−8.5***
Cognition and general knowledge			
Teacher-reported math skills			
% high proficiency	19.1	25.8	6.7***
% low proficiency	56.7	50.0	−6.7***
Physical well-being and development			
% "fair" or "poor" health	2.8	2.9	0.1
% underweight (BMI <14)	7.3	6.0	−1.3***
% overweight (BMI ≥17)	25.9	27.9	2.0***
% obese (BMI ≥18)	14.1	16.2	2.1***
% low birthweight (<2500 g)	7.7	9.3	1.6***
% preterm birth (<37 weeks)	10.8	14.4	3.6***

Source: Bassok and Latham (2017) and Latham et al. (2017)
Note. Estimates are weighted to be nationally representative
+ $p < 0.10$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Changes in Social and Emotional Development from 1998 to 2010

Definition and Importance of Social and Emotional Development

While there is broad consensus among parents, teachers, and researchers that social and emotional development is important for young children, this term is difficult to define and to measure. It encompasses a wide range of skills, many of which are internal and thus not directly observable. Important components of social and emotional learning include social competence, self-regulation, and maladjustment. Social competence reflects how a child interacts with and gets along with others. This may include the ability to communicate needs and wants effectively and be sensitive to the needs of others. Self-regulation is the ability to manage and channel

Table 2 Changes in school readiness at kindergarten entry (1998–2010) by race/ethnicity

	White children			Black children			Hispanic children		
Domain	1998	2010	Change	1998	2010	Change	1998	2010	Change
Social and emotional development									
% poor self-control	13.2	13.8	0.6	23.5	24.5	1.0	14.1	17.2	3.1**
% poor interpersonal behavior	14.3	13.2	−1.1	23.5	20.7	−2.8+	17.5	16.9	−0.6
% high externalizing behavior	11.9	10.9	−1.0	19.7	19.1	−0.6	11.7	11.1	−0.6
% high internalizing behavior	11.1	8.2	−2.9***	12.0	9.0	−3.0**	12.6	10.1	−2.5**
Approaches toward learning									
% poor approaches toward learning	14.0	18.9	4.9***	24.8	28.4	3.6**	20.3	24.2	3.9**
Language and literacy									
Teacher-reported literacy skills									
% high proficiency	27.7	31.8	4.1***	14.5	22.3	7.8***	12.2	16.7	4.5***
% low proficiency	47.1	41.0	−6.1***	63.5	54.0	−9.5***	70.7	60.9	−9.8***
Cognition and general knowledge									
Teacher-reported math skills									
% high proficiency	24.3	31.4	7.1***	13.2	22.8	9.6***	10.7	17.8	7.1***
% low proficiency	47.9	41.6	−6.3***	67.5	55.4	−12.1***	70.1	60.1	−10.0***
Physical well-being and development									
% "fair" or "poor" health	1.7	1.7	0.0	4.8	4.1	−0.7	4.6	5.3	0.7
% underweight (BMI <14)	7.6	6.3	−1.3**	7.1	6.7	−0.4	5.2	4.0	−1.2+
% overweight (BMI ≥17)	23.9	24.7	0.8	27.9	31.6	3.7*	31.4	34.0	2.6*
% obese (BMI ≥18)	12.5	13.6	1.1+	14.6	19.6	5.0**	18.6	20.6	2.0*
% low birthweight (<2500 g)	6.2	8.0	1.8***	14.0	15.5	1.5	7.6	8.9	1.3%
Preterm birth (<37 weeks)	11.3	15.1	3.8***	12.2	16.4	4.2***	8.7	11.9	3.2***

Source: Bassok and Latham (2017), Latham et al. (2017) and author's calculations from two cohorts of the ECLS-K
Note. Estimates are weighted to be nationally representative
+ $p < 0.10$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Table 3 Changes in school readiness at kindergarten entry 1998–2010, by income

	90th income percentile			10th income percentile		
Domain	1998	2010	Change	1998	2010	Change
Social and emotional development						
% poor self-control	11.0	12.1	1.1	20.0	20.9	0.9
% poor interpersonal behavior	11.1	13.3	2.2	23.5	19.2	−4.3**
% high externalizing behavior	9.2	7.7	−1.5	16.8	15.9	−0.9
% high internalizing behavior	10.4	7.0	−3.4+	15.1	9.0	−6.1***
Approaches toward learning						
% poor approaches toward learning	9.7	14.2	4.5+	27.5	29.8	2.3
Language and literacy						
Teacher-reported literacy skills						
% high proficiency	37.3	41.9	4.6+	8.3	12.4	4.1***
% low proficiency	36.3	30.7	−5.6*	76.2	62.1	−14.1***
Cognition and general knowledge						
Teacher-reported math skills						
% high proficiency	32.9	40.4	7.5**	8.1	16.7	8.6***
% low proficiency	37.4	31.0	−6.4*	76.2	59.8	−16.4***
Physical well-being and development						
% “fair” or “poor” health	0.9	0.8	−0.1	5.5	4.9	−0.6
% underweight (BMI <14)	6.7	5.8	−0.9	6.7	5.4	−1.3*
% overweight (BMI ≥17)	21.8	18.6	−3.2*	28.3	31.8	3.5**
% obese (BMI ≥18)	10.3	9.0	−1.3	15.8	18.9	3.1*
% low birthweight (<2500 g)	5.5	7.7	2.2*	8.7	11.2	2.5
% preterm birth (<37 weeks)	10.3	15.1	4.8**	9.5	15.2	5.7***

Source: Latham et al. (2017) and author’s calculations from two cohorts of the ECLS-K
Note. Estimates are weighted to be nationally representative
+ $p < 0.10$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

powerful emotions constructively and to focus attention. Maladjustment includes symptoms that interfere with a child’s ability to function either at home or among peers. These symptoms may affect a child internally or be expressed externally (Snow & Van Hemel, 2008).

Social and emotional development plays a crucial role in how children develop relationships with the peers and adults in their lives, both of which are critical for success in school. Children who enjoy positive relationships with other students and with teachers are likely to enjoy school more and to learn more easily. Social and emotional skills are particularly important for children making the transition to school, and kindergarten teachers consistently rate these skills as more important for kindergarten readiness than knowledge of academic content (Abry, Latham, Bassok, & LoCasale-Crouch, 2015; Lin, Lawrence, & Gorrell, 2003). Children with greater social and emotional skills participate more in class, are more accepted by classmates and teachers, and receive more positive feedback from teachers (Domitrovich, Cortes, & Greenberg, 2007). Those who are unable to regulate their

Table 4 Changes in school readiness gaps at kindergarten entry (1998–2010)

	White-black gap			White-Hispanic gap			90/10 income gap		
Domain	1998	2010	Change	1998	2010	Change	1998	2010	Change
Social and emotional development									
% poor self-control	−10.3	−10.7	−0.4	−0.9	−3.4	−2.5***	−8.9	−8.8	0.1
% poor interpersonal behavior	−9.2	−7.5	1.8*	−3.2	−3.7	−0.5	−12.4	−5.9	6.5***
% high externalizing behavior	−7.8	−8.2	−0.5	0.3	−0.2	−0.4	−7.6	−8.2	−0.5
% high internalizing behavior	−1.0	−0.8	0.2	−1.6	−1.9	−0.3	−4.7	−2.0	2.7*
Approaches toward learning									
% poor approaches toward learning	−10.8	−9.5	1.3+	−6.3	−5.3	1.0	−17.8	−15.6	2.3+
Language and literacy development									
Teacher-reported literacy skills									
% high proficiency	13.2	9.5	−3.7***	15.5	15.2	−0.3	29.0	29.5	0.5
% low proficiency	−16.4	−13.0	3.4***	−23.6	−19.9	3.7***	−39.9	−31.4	8.5***
Direct literacy assessments[a]	0.39	0.32	−0.07	–	0.56	N/A	1.26	1.06	−0.21***
Cognition and general knowledge									
Teacher-reported math skills									
% high proficiency	11.1	8.5	−2.6**	13.7	13.6	−0.1	24.8	23.7	−1.1
% low proficiency	−19.7	−13.7	5.9***	−22.3	−18.5	3.8***	−38.8	−28.8	10.0***
Direct math assessments[a]	0.62	0.55	−0.08+	0.78	0.67	−0.11*	1.30	1.17	−0.13***
Executive function									
Working memory[a]	–	0.53	N/A	–	0.51	N/A	–	0.80	N/A
Cognitive flexibility[a]	–	0.41	N/A	–	0.39	N/A	–	0.46	N/A

(continued)

Table 4 (continued)

	White-black gap			White-Hispanic gap			90/10 income gap		
Domain	1998	2010	Change	1998	2010	Change	1998	2010	Change
Physical well-being and development									
% "fair" or "poor" health	−3.1	−2.4	0.7	−2.9	−3.6	−0.7	−4.7	−4.1	0.6
% underweight (BMI <14)	0.5	−0.4	−0.9*	2.4	2.3	−0.1	0.0	0.4	0.4
% overweight (BMI ≥17)	−4.0	−7.0	−3.0***	−7.5	−9.3	−1.8**	−6.5	−13.2	−6.7***
% obese (BMI ≥18)	−2.2	−5.9	−3.7***	−6.1	−7.0	−0.9	−5.5	−9.9	−4.4***
% low birthweight (<2500 g)	−7.7	−7.5	0.2	−1.4	−1.0	0.4	−3.3	−3.5	−0.2
% preterm birth (<37 weeks)	−0.9	−1.3	−0.4	2.5	3.2	0.7	0.9	−0.1	−1.0

Source: Reardon and Portilla (2016) and Latham et al. (2017). Executive function estimates are author's calculations from the 2010 ECLS-K cohort

Note. Estimates are weighted to be nationally representative. White-black and white-Hispanic gaps are calculated by subtracting scores for black and Hispanic students, respectively, from scores for white students. 90/10 income gap is calculated by subtracting scores for children in the 10th income percentile from children in the 90th income percentile

+ $p < 0.10$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

[a]Denotes gaps that are reported in population standard deviation units

emotions are likely to experience higher levels of stress in the classroom, which can negatively affect their ability to learn (Blair & Diamond, 2008).

Social and emotional skills early in childhood can also have consequences that last beyond kindergarten. Negative child behavior in kindergarten is associated with conduct problems, learning problems, increased shyness, and higher anxiety through eighth grade (Hamre & Pianta, 2001). Young children who lack friendships are at risk for poor emotion regulation later in life (Vandell, Nenide, & Van Winkle, 2006). By contrast, children with better social and communication skills in kindergarten had better employment outcomes, less criminal activity and substance use, and better mental health as young adults (Jones, Greenberg, & Crowley, 2015; Moffitt et al., 2011).

Social and emotional skills also have direct implications for children's academic success. Children who enter school without the ability to pay attention, listen to instructions, and demonstrate self-control are more likely to struggle in elementary and middle school (McClelland et al., 2007; Turney & McLanahan, 2015). Children who exhibit problem behaviors in early childhood are less likely to graduate high school (McLeod & Kaiser, 2004), and attention span at age 4 is even predictive of college completion rates (McClelland, Acock, Piccinin, Rhea, & Stallings, 2013).

Measures of Social and Emotional Development

In the fall of kindergarten, children's behavior was assessed using an adapted form of the Social Skills Rating System (Gresham & Elliott, 1990). This assessment has been widely used to measure the social and emotional skills of young children (e.g., Claessens, Duncan, & Engel, 2009; Duncan et al., 2007). Teachers were asked to rate the frequency of student behaviors on a 1–4 scale from *never* to *very often*. These items were combined into four subscales: self-control, interpersonal skills, externalizing problem behavior, and internalizing problem behavior.

The self-control subscale contains items relating to children's ability to respect others' property, control temper, accept peer ideas, and respond appropriately to peer pressure.

The interpersonal behavior scale measures whether children are able to form and maintain friendships; get along with people who are different; comfort or help other children; express feelings, ideas, and opinions in positive ways; and show sensitivity to others. For each of these two subscales, higher scores are an indication of more positive behavior.

The externalizing problem behavior scale is a measure of how often a child argues, fights, gets angry, acts impulsively, or disturbs classroom activities. The internalizing problem behavior measures anxiety, loneliness, low self-esteem, and sadness. For each of these two subscales, higher scores are indicative of *worse* behavior. Split-half reliabilities for all four of the subscales are high, ranging between 0.76 and 0.92 across both cohorts (Tourangeau et al., 2001, 2015).

Changes in Levels of Social and Emotional Skills

Bassok and Latham (2017) examined changes from 1998 to 2010 across the four measures of social and emotional development described above. Teacher responses to these items were highly skewed, in that teachers reported that most children were well-behaved. For that reason, they constructed indicators of "poor" behavior. Specifically, they examined changes in the percentage of children who exhibited *low* levels of self-control and interpersonal behavior (i.e., 1 standard deviation [SD] below the 1998 mean) and *high* levels of internalizing and externalizing behavior (i.e., 1 SD *above* the 1998 mean). These results are reported in Table 1. Bassok and Latham document a small but statistically significant increase in the percentage of children who exhibited poor self-control (16.7% in 2010 compared with 15.3% in 1998), indicating worse behavior in the more recent cohort. By contrast, they document a decrease in the percentage of children who exhibited high internalizing behavior (9.1% in 2010 compared with 11.7% in 1998), indicating *better* behavior in the more recent cohort. They found no evidence of changes over time in poor interpersonal behavior or high externalizing problem behavior (Bassok & Latham, 2017). Overall, they do not find much evidence that children's behavior either improved or declined substantially on these measures across the 12-year period.

Changes in Race/Ethnicity and Income-Based Gaps in Social and Emotional Skills

Table 4 shows changes in gaps over time on the four measures from Bassok and Latham (2017) using the same approach of Reardon and Portilla (2016), focusing on the white-black, white-Hispanic, and 90/10 gaps (i.e., the gap between children at the 90th and 10th income percentiles). In 1998, there were large differences between white and black children across these measures. Black children were about 10 percentage points more likely to be rated as having poor self-control and about 9 and 8 percentage points more likely to exhibit poor interpersonal or high externalizing behavior, respectively. Across the period considered, the gap in interpersonal behavior declined modestly, by 1.8 percentage points, but gaps in self-control and externalizing behavior were largely unchanged.

The gaps between white and Hispanic children on these measures were considerably smaller in both cohorts. In 1998, Hispanic children were 3.2 percentage points more likely to demonstrate poor interpersonal behavior than white children and 1.6 percentage points more likely to demonstrate high internalizing behavior. Although the white-Hispanic gap in self-control was just 0.9 percentage points in 1998, this grew significantly to 3.4 percentage points in 2010. This change reflects a relative increase in poor self-control among Hispanic children (Table 2).

There were also large gaps between children at the 90th and 10th income percentile on all four of the measures considered. For instance, lower-income children

were about 9 percentage points more likely to demonstrate poor self-control and 8 percentage points more likely to demonstrate poor externalizing behavior. These gaps did not change significantly across the period considered. By contrast, gaps in both interpersonal behavior and internalizing behavior declined over time (Table 4). These declines were primarily driven by relative declines in poor behavior among low-income children (Table 3).

Changes in Approaches Toward Learning from 1998 to 2010

Definition and Importance of Approaches Toward Learning

Approaches toward learning influence the way children both think about and act upon opportunities to learn. Although this domain is closely related to social and emotional learning, it is conceptually distinct. Specifically, it reflects a range of attitudes, habits, and learning styles, rather than a set of skills. Children with positive approaches toward learning can attend to relevant tasks and persist in the face of difficulty, as well as use strategy to solve problems and show flexibility when strategies don't work out. They are curious, creative, and cooperative when engaging in learning activities (Fantuzzo, Perry, & McDermott, 2004).

Although this is generally the least well-researched of the five domains considered, it has recently gained attention as a crucial component of children's ability to succeed in school. Positive approaches toward learning have been found to be uniquely associated with early academic success, above and beyond cognitive ability and social engagement (McWayne, Fantuzzo, & McDermott, 2004; Yen, Konold, & McDermott, 2004). Children with positive approaches toward learning earn better grades, see faster growth in math and reading ability, and have reduced risk of academic failure (DiPerna, Lei, & Reid, 2007; Fantuzzo et al., 2004; Li-Grining, Votruba-Drzal, Maldonado-Carreño, & Haas, 2010; Schaefer & McDermott, 1999). These positive dispositions may be particularly beneficial among low-income children, who often face additional barriers to academic success (Fantuzzo et al., 2007).

Measures of Approaches Toward Learning

The ECLS-K datasets contain a broad measure of approaches to learning that was adapted from the Social Skills Rating System (Gresham & Elliott, 1990). To assess each child, teachers rated six items on a 1–4 scale from *never* to *very often.* Teachers were asked about each child's attentiveness, task persistence, eagerness to learn, learning independence, flexibility, and organization. Their responses were averaged to construct a single score for each child. The split-half reliabilities of this measure were 0.89 in 1998 and 0.91 in 2010.

Changes in Levels of Approaches Toward Learning

Bassok and Latham (2017) examined changes over time in teacher-reported approaches to learning. These distributions were skewed in that teachers rated most children quite high on this measure. For this reason, the authors dichotomized the measure, constructing an indicator for "poor" approaches to learning (i.e., 1 SD below the 1998 mean). They find that kindergarteners in 2010 exhibited poorer approaches to learning than in 1998. Specifically, the percentage of children who had poor approaches to learning increased from 17.4% to 22.8% across this period (Table 1).

Changes in Race/Ethnicity and Income-Based Gaps in Approaches Toward Learning

In Table 4, I document changes in gaps over time in approaches to learning on an identical measure to Bassok and Latham (2017). Black and Hispanic children were about 11 and 6 percentage points more likely to demonstrate poor approaches toward learning than were white children in 1998. Lower-income children were almost 18 percentage points more likely to demonstrate poor approaches toward learning than were higher-income children.

Both race/ethnicity and income-based gaps declined modestly across the period considered, but importantly, this was driven by disproportionate increases in poor approaches to learning among white and higher-income children (Tables 2 and 3).

Reardon and Portilla also document gaps in approaches toward learning and find evidence that gaps have declined over time. To maintain consistency in how this domain is measured across summary tables, I do not report those results here.

Changes in Language and Literacy Skills from 1998 to 2010

Definition and Importance of Language and Literacy Skills

Language development allows children to interact and communicate with others and represent their thoughts and experiences. It is a complex process that involves a wide variety of skills. Two important and distinct components of language development are verbal language and literacy. For children to develop verbal language, they must be able to identify and discriminate between different sounds. They must develop a vocabulary of sounds and words, as well as an understanding of grammar. They must also learn how language can be used socially, to give and receive information, and to communicate wants and needs (Kagan et al., 1995). To develop literacy, children must learn the names and sounds of the letters and learn that words

can be broken down into parts and analyzed ("phonological awareness"). They must understand the conventions of print and understand that writing can be used for various purposes and that reading can provide new and interesting information (Snow & Van Hemel, 2008).

Children with strong early language skills are often successful academically, as development of language and literacy allows children to learn more quickly both inside and out of the classroom. Vocabulary, phonological awareness, and knowledge of letter names and sounds are strongly predictive of reading ability both in kindergarten and in elementary school (Hulme, Bowyer-Crane, Carroll, Duff, & Snowling, 2012; Melby-Lervåg, Lyster, & Hulme, 2012; Poe, Burchinal, & Roberts, 2004; Roth, Speece, & Cooper, 2002; Schatschneider, Fletcher, Francis, Carlson, & Foorman, 2004; Sénéchal & LeFevre, 2002). Literacy ability at kindergarten entry is also predictive of long-term outcomes. Children with strong early literacy skills demonstrate stronger reading ability, earn better grades throughout schooling, and are more likely to graduate high school (Claessens et al., 2009; Duncan et al., 2007; Magnuson, Duncan, Lee, & Metzger, 2016; Watts, Duncan, Siegler, & Davis-Kean, 2014). They also attend college at higher rates and have higher earnings as adults (Chetty et al., 2011).

Measures of Language and Literacy

Children's language and literacy ability was directly measured in the fall of the kindergarten year. This assessment was conducted in two stages. First, children were given a routing test, to roughly determine their ability. Based on how they scored, they were administered either an easy, intermediate, or difficult test in the second stage. The purpose of the two-stage assessment was to maximize accuracy of measurement while minimizing burden on the child. The assessments contained both multiple-choice and open-ended items and included measures of basic skills such as print familiarity, letter recognition, beginning and ending sounds, rhyming sounds, word recognition, vocabulary, and reading comprehension (Tourangeau et al., 2001; Tourangeau et al., 2015). These direct assessments allow for comparisons of students within the same cohort, so they may be used to compare achievement gaps over time. Unfortunately, the direct assessments are measured on different scales across cohorts and have not been equated. As a result, they cannot be used to estimate differences in *levels* of student language proficiency over time.

To assess changes in levels of proficiency, children's skills were also assessed by their teachers. Specifically, teachers were asked to rate each child on the following items, on a 1–5 scale from *not yet* to *proficient*:

- Uses complex sentence structures
- Understands and interprets stories read to him/her
- Easily names all upper and lowercase letters

- Predicts what will happen next in stories
- Reads simple books independently
- Demonstrates early writing behaviors
- Understands conventions of print

Unlike the direct assessments, these teacher-reported measures can be compared over time. When combined, these measures provide a broad picture of children's language and literacy skills at kindergarten entry. The reliabilities for these teacher-reported measures were 0.87 in 1998 and 0.93 in 2010.

Changes in Levels of Language and Literacy Skills

Bassok and Latham (2017) documented changes from 1998 to 2010 on teacher-reported measures of language and literacy. Comparing the average of the seven teacher-reported skills described above, they find that student skills increased substantially over time, about 0.23 SD. More concretely, the authors estimate that students in 2010 entered kindergarten having already learned about 15% of the literacy skills they would acquire across the kindergarten year in 1998. Although this measure is useful for comparisons across time, the scale used is not readily interpretable at either time point. For this reason, these results are omitted from Table 1.

Bassok and Latham also consider changes over time in the percentage of students who demonstrate high and low proficiency across the seven language and literacy skills. They classify a child as "high proficiency" in literacy if the child was rated as proficient (i.e., 4 or 5 on a 1–5 scale) on at least half of the seven skills considered. Similarly, they classified a student as "low proficiency" if the child was rated not proficient (i.e., 1 or 2 on a 1–5 scale) on at least half of skills considered. Improvements along these measures over time are reported in Table 1. The percentage of students classified as high proficiency in language and literacy increased from 21.4% to 25.6% from 1998 to 2010, while the percentage of students classified as low proficiency dropped 8.5 percentage points, from 57.2% to 48.7%.

Changes in Race/Ethnicity and Income-Based Gaps in Language and Literacy

Both Reardon and Portilla (2016) and Bassok and Latham (2017) examine whether gaps in student literacy skills have changed over time. Both sets of results are included in Table 4. Reardon and Portilla examined these changes using direct assessments. They document that the white-black gap in language and literacy was approximately 0.4 SD in 1998. This gap shrunk marginally from 1998 to 2010, but the decline over time was not significant. Similarly, Bassok and Latham found that when considering teacher-reported outcomes, the white-black gap narrowed over

time. For instance, both black and white children were more likely to be proficient in 2010 when compared with 1998, but black children improved by 7.8 percentage points over this time, compared with a 4.1 percentage point improvement among white children (Table 2). Similarly, the percentage of black students who demonstrated low proficiency in literacy *declined* disproportionately across this period, about 10 percentage points (from 63.5% to 54.0%) compared with a 6 percentage point decline among white children (from 47.1% to 41.0%).

Reardon and Portilla were not able to estimate changes over time to the Hispanic-white literacy gap using direct assessments due to changes over time in how these assessments were conducted among Spanish speakers. However, Bassok and Latham examined changes to this gap using teacher-reported outcomes and found modest evidence that gaps between Hispanic and white children at kindergarten entry had narrowed (Table 4). Specifically, they found that Hispanic children were disproportionately less likely to be classified as low proficiency in 2010. This result was driven by relative gains among Hispanic children. Over this time, the percentage of Hispanic children who demonstrated low proficiency declined by 9.8 percentage points, compared with a 6.1 percentage point decline among white children (Table 2). By contrast, Hispanic children were not differentially likely to be classified as high proficiency in 2010.

Reardon and Portilla also examined changes over time in income-based achievement gaps, comparing students in the 90th percentile of the income distribution to those in the 10th percentile. These estimates are reported in Table 4. They document that in 1998, higher-income children had much stronger language and literacy skills, about 1.26 SD higher than lower-income children. By 2010, this gap had declined modestly to 1.06 SD, but it still reflects a vast gap in skills between the highest- and lowest-income children. Similarly, in Table 4 I document 90/10 gaps using the teacher-reported measures from Bassok and Latham (2017) and find large gaps that declined modestly over time.

Changes in Cognition and General Knowledge from 1998 to 2010

Definition and Importance of Cognition and General Knowledge

Cognition and general knowledge is a broad domain that includes knowledge of specific topics including math, social studies, science, as well as more specific cognitive skills such as attention, executive function, and memory. This domain is generally the one most associated with success in schooling, as it contains a broad array of skills that are valuable to student learning (Kagan et al., 1995). In this domain, mathematics ability often garners the most attention. At the earliest stages, math education overlaps with language and literacy. For instance, children must learn the language and grammar of counting. They must learn the names of shapes and words

denoting quantity, such as "more" and "less." Some math knowledge is dependent on rote memory. This includes number sense (counting, performing simple addition and subtraction) and spatial sense (recognizing shapes and their basic properties). Other knowledge is dependent upon processes of thinking, such as pattern recognition or the ability to compare different objects and classify/sort based on size or other characteristics. Many of these skills develop as a by-product of everyday activities, but learning can also be accelerated through specific instruction (Ginsburg, Lee, & Boyd, 2008).

Early math skills are foundational to success in school, and math ability at kindergarten entry is strongly linked to success in kindergarten and in the elementary grades (La Paro & Pianta, 2000). Reflecting this, math standards are included in every set of state early learning standards in the USA (Scott-Little et al., 2006). These skills are predictive of academic achievement in high school as well as college attendance and degree attainment (Chetty et al., 2011; Claessens et al., 2009; Duncan et al., 2007; Ritchie & Bates, 2013). Student growth in math knowledge from preschool through first grade is even more strongly predictive of later achievement (Watts et al., 2014).

The consequences of poor math skills also extend beyond the classroom. Adults who exhibit poor math skills have less accurate perceptions of health risks, show poorer judgment when making medical decisions, and have poorer health outcomes overall (Reyna & Brainerd, 2007). They are also more likely to make poor financial decisions (Agarwal & Mazumder, 2013).

Measures of Cognition and General Knowledge

Among the different components of this domain, the ECLS-K datasets only contain comparable measures of children's math knowledge at kindergarten entry. Similar to the language and literacy assessment, students were assessed in mathematical thinking using a two-stage design. Children were first administered a broad test of ability and were routed into either an easy, intermediate, or difficult assessment in the second stage to assess their ability more precisely. The math assessment measured three broad areas: conceptual knowledge, procedural knowledge, and problem solving. More specifically, the assessment contained items relating to number sense, number properties, operations, geometry, spatial sense, data analysis, statistics, probability, patterns, algebra, and functions. Children could use manipulatives to answer some of the items (Tourangeau et al., 2001; 2015). As with the language and literacy measures described above, these direct assessments only allow for comparisons of students within the same cohort, because they are measured on different scales across cohorts that have not been equated. For this reason, they can be used to estimate changes in *gaps* over time, but not changes in levels of proficiency.

To assess changes in levels of math proficiency, children's skills were also assessed by their teachers. Specifically, teachers were asked to rate each child on the following items, on a 1–5 scale from *not yet* to *proficient*:

- Sorts math materials by various rules and attributes
- Orders groups of objects (by height, color, etc.)
- Understands relative quantities
- Solves problems using numbers
- Understands graphing activities
- Uses instruments accurately for measuring
- Uses a variety of strategies to solve math problems

Unlike the direct assessments, these teacher-reported measures can be compared over time. When combined, they provide a broad measure of the math skills that children display at kindergarten entry. The reliabilities of these teacher-reported measures were 0.92 in 1998 and 0.95 in 2010.

In the 2010 cohort (but not 1998), the ECLS-K also assessed children on two tasks related to executive function. To assess working memory, children were asked to repeat increasingly long sequences of numbers in reverse order. To assess cognitive flexibility, children were asked to sort a series of cards into different trays according to different rules (Tourangeau et al., 2015).

Changes in Levels of Cognition and General Knowledge

Bassok and Latham (2017) compared teacher-reported math skills at kindergarten entry over time. They averaged ratings across the seven math skills described above and document substantial increases on this measure across the period considered. They find that kindergarteners were a full quarter of a standard deviation more proficient at kindergarten entry in 2010 compared with 1998. They estimate that students in 2010 entered kindergarten having already learned about 17% of the math skills they would have acquired across the kindergarten year in 1998. Although this measure is useful for comparisons across time, the scale is not readily interpretable at either time point. For this reason, these results are omitted from Table 1.

Bassok and Latham also considered the proportion of students that demonstrated high and low proficiency in math. They classify a child as "high proficiency" in math if the child was rated proficient (i.e., 4 or 5 on a 1–5 scale) on at least half of the seven skills considered. Similarly, they classified a student as "low proficiency" if the child was rated not proficient (i.e., 1 or 2 on a 1–5 scale) on at least half of skills considered. On these measures, they also document substantial improvements in math skills over time (Table 1). The percentage of students classified as high proficiency in math increased from 19.1% to 25.8%, while the percentage of students classified as low proficiency dropped from 56.7% to 50%.

Changes in Race/Ethnicity and Income-Based Gaps in Cognition and General Knowledge

Both Reardon and Portilla (2016) and Bassok and Latham (2017) explored changes in math achievement gaps over time. These results are included in Table 4. Reardon and Portilla examined this question using direct student assessments. They found that in 1998, the white-black achievement gap in math was 0.62 SD, reflecting a large difference in skills between white and black children. By 2010, this gap had declined by about 0.08 SD but remained quite large. Bassok and Latham documented similar changes in gaps over time using teacher-reported outcomes. For instance, in 1998, black children were 13.2 percentage points less likely to be classified as high proficiency than were white children. By 2010, this gap had declined to 9.5 percentage points. This change was driven by relative gains among black children, who were 9.6 percentage points more likely to be rated highly proficient in 2010, compared with a 7.1 percentage point increase among white children (Table 2). Similarly, the percentage of black children who demonstrated low proficiency declined by about 12 percentage points over time (from 67.5% to 55.4%), compared with an approximately 6 percentage point decline among white children (from 47.9% to 41.6%). Reardon and Portilla estimated that the white-Hispanic gap on a direct math assessment was 0.78 SD in 1998, even larger than the white-black gap (Table 4). They found that the gap declined significantly over time, by about 0.11 SD, but that the gap remained quite large in 2010. Bassok and Latham found that the white-Hispanic gap in low math proficiency declined significantly but found no evidence that the gap in high math proficiency has narrowed.

Reardon and Portilla also examined changes over time in the 90/10 math achievement gap. They documented a large difference between students at the top and bottom of the income distribution in 1998, about 1.3 SD. This gap declined modestly over time, to 1.17 SD in 1998, but remained about twice as large as the white-black gap and 1.5 times as large as the white-Hispanic gap in 2010. In Table 4, I also document 90/10 gaps using the teacher-reported measures from Bassok and Latham (2017), and like Reardon and Portilla, I find that these gaps are quite large in 1998. Over time, I find that the 90/10 gap in low math proficiency decreased by about 10 percentage points (more than 25% of the initial gap). This decline was driven by disproportionate gains among the lowest-income children (Table 3.) By contrast, the 90/10 gap in high math proficiency did not decrease over time.

Finally, in 2010, I document large gaps across two measures of executive function. Black and Hispanic children performed about 0.5 and 0.4 SD lower on tasks of working memory and cognitive flexibility, respectively. Low-income children performed about 0.8 and 0.5 SD lower on these tasks. These measures were collected only for the 2010 cohort, so it is not possible to examine whether and how these gaps changed across cohorts.

Changes in Physical Well-Being and Development from 1998 to 2010

Definition and Importance of Physical Well-Being and Development

This domain encompasses children's physical development and abilities, including rate of growth, physical fitness, and body physiology. It also includes gross motor skills, such as the ability to run, walk, or jump, as well as fine motor skills, which require dexterity and precision. Children's health in early childhood is influenced by their health at birth, so this domain can also include birth outcomes such as preterm status or low birthweight.

Physical well-being plays a crucial role in student learning. Children who are healthy are able to freely focus on school, without discomfort or special arrangements. By contrast, children who have health problems may develop a sense of isolation or lack of belonging, which can make it difficult to adapt to the school environment. Health problems can also lead children to miss days of school, directly affecting their ability to learn and succeed (Kagan et al., 1995). Indeed, virtually all kindergarten teachers rate good health as essential for success in kindergarten (Piotrkowski, Botsko, & Matthews, 2000).

Health in early childhood also has implications that last well beyond kindergarten. Children born preterm or at a low birthweight are at risk for many long-term health issues, such as deficits in motor development, hearing, vision, cognition, behavior, and physical growth (Behrman & Butler, 2007; Figlio, Guryan, Karbownik, & Roth, 2014). Children who are overweight or obese are considerably more likely to be overweight or obese into adulthood and are at increased risk for diabetes, cardiovascular disease, and premature death (Kelly et al., 2013). Across a wide variety of studies, childhood health has been linked not only to adult health outcomes but also to academic and occupational attainment, income, and wealth (Delaney & Smith, 2012).

Measures of Physical Well-Being and Development

As a broad measure of health, parents were asked to rate their child's health on a 1–5 scale from *poor* to *excellent*. Children were also measured and weighed in the fall of kindergarten. These can be combined to calculate each child's body mass index (BMI – calculated as weight in kilograms divided by height in meters), a common metric used to determine fitness. For children aged 5 years old, a healthy BMI is between 14 and 17. Children this age are classified as underweight if their BMI is below 14. They are classified as overweight or obese if their BMI is over 17 or 18, respectively (Grummer-Strawn, Reinold, & Krebs, 2010). Unfortunately, although

measures of gross and fine motor development were collected in the original ECLS-K, they were not collected for the more recent cohort.

In addition to direct measures of well-being and development, the ECLS-K includes parent reports of children's health at birth. Specifically, parents reported children's birthweight and whether they were born preterm. Children were classified as low birthweight if they were born weighing less than 2500 g (Wardlaw, 2004). They were classified as preterm if they were born before 37 weeks (World Health Organization, 2016).

Changes in Levels of Physical Well-Being and Development

Latham et al. (2017) document changes in physical well-being at kindergarten entry across the period considered. These results are reported in Table 1. To evaluate whether there has been a change in major health impairments over time, Latham et al. compare the percentage of children whose parents reported that they were in "fair" or "poor" health (i.e., 1 or 2 on a scale 1–5). They find no change across cohorts on this broad measure, as about 3% of parents reported that their children's health was "fair" or "poor" in both cohorts. However, they find evidence that children's fitness has decreased over time. Although the percentage of entering kindergarteners who were underweight decreased from 7.3% to 6%, the percentage of children who were overweight increased 2 percentage points from 25.9% to 27.9%. The percentage of children who were obese increased by roughly the same amount, from 14.1% to 16.2%.

Across the same period, there was a significant increase in both the percentage of children who were born preterm and in the incidence of children born with a low birthweight. In 2010, 9.3% of children were low birthweight, up from 7.7% in 1998. There was also a large increase in the percentage of children who were born preterm, from 10.8% to 14.4%.

Changes in Race/Ethnicity and Income-Based Gaps in Physical Well-Being and Development

Latham et al. (2017) also examined how gaps in physical well-being have changed over time. In 1998, black and Hispanic children were about 3 percentage points more likely to be in "fair" or "poor" health than were white children (Table 4). These gaps did not change significantly from 1998 to 2010. The gap between children at the 10th percentile and the 90th percentile was slightly larger, about 4.7 percentage points. This gap also did not change significantly over time.

By contrast, Latham et al. document large changes over time to gaps in overweight and obesity. In 1998, black children were approximately 4 and 2 percentage

points more likely to be overweight and obese, respectively, than were white children. They were 7 and 6 percentage points more likely to be overweight and obese in 2010. The gap in overweight between white and Hispanic children also grew by about 2 percentage points across this period to over 9 percentage points. The growth of these gaps was driven by disproportionate increases in BMI among black and Hispanic children, as white children were only slightly more likely to be overweight/obese in 2010 than in 1998 (Table 2).

Changes in overweight/obesity gaps between children in the 10th and 90th percentile were even more striking. In 1998, low-income children were 6.5 percentage points more likely to be overweight than high-income children, but that gap increased to 13.2 percentage points by 2010 (Table 4). Similarly, the gap for obesity increased from 5.5 to 9.9 percentage points across the 12-year period. The growth in these gaps was a combination of increased rates of overweight/obesity among the lowest-income children and *decreased* rates of obesity among the highest-income children (Table 3).

Latham et al. also examine differences by race/ethnicity and income in birth outcomes. These results are included in Table 4. They find that black children were substantially more likely to be born at a low birthweight across both cohorts, but this gap did not change significantly over time (approximately 7.5 percentage points in both cohorts). Similarly, low-income children were about 3.5 percentage points more likely to be born at a low birthweight across both cohorts. They do not find significant gaps based on race/ethnicity or income in terms of preterm birth.

Summary and Conclusions

This chapter aimed to summarize changes across five major domains of kindergarten readiness spanning two large nationally representative cohorts of children entering kindergarten in 1998 and 2010. Across the five domains considered, there is evidence that student skills and attributes changed substantially in this relatively brief, 12-year period.

The most striking changes documented across the two cohorts are improvements in student math and literacy skills over time. Children entering kindergarten in 2010 arrived with stronger skills across a broad array of topics in these areas. Bassok and Latham (2017) estimate that children arrived having already learned an average of 15–17% of the skills they would learn across the kindergarten year in 1998. These changes mean that students are entering kindergarten with a different set of skills than in the past. The evidence also suggests that improvements in math and literacy have been largest among traditionally disadvantaged groups (i.e., minority and low SES students). Whether considering direct assessments or teacher ratings of student skills, gaps based on race/ethnicity and income have narrowed across the period considered.

What is likely to account for these improvements over time? Bassok and Latham (2017) found little evidence that they were driven by increased access to preschool.

Importantly, they were not able to account for changes in the quality of early child care, which may be more relevant than increases in access. For instance, state spending on preschool nearly doubled between 2002 and 2015 to over $6.2 billion (Barnett et al., 2016). Although the percentage of children who attend center-based care has not increased across this period, the number of children who attend state-sponsored preschool has risen dramatically (Bassok & Latham, 2017; US Census Bureau, 2015). In many cases, state-sponsored preschool providers face more stringent quality requirements than private centers or individual care providers. Many of these programs are also targeted toward disadvantaged children who would otherwise not have access to high-quality care (Barnett, 2010).

Improvements in children's skills may also be driven by increased attention paid to math and literacy in the home environment. Parents now invest more heavily in the pre-kindergarten years than in previous decades (Kornrich & Furstenberg, 2013). Children have greater access to books and educational games, and spend more time interacting with their parents, both at home and through educational outings. Further, these increases in parental investments have disproportionately occurred among the lowest-income parents (Bassok, Finch, Lee, Reardon, & Waldfogel, 2016). These trends are consistent with the improvements over time and disproportionate improvements among low-income and minority children documented here.

Despite this encouraging evidence, achievement gaps remain quite large. For instance, Hill, Bloom, Black, & Lipsey (2008) estimate that children's average learning across the kindergarten year constitutes approximately a 1.5 SD improvement in literacy and a 1.15 SD improvement in math. Using these benchmarks, black children in 2010 entered kindergarten about 1/5 of a grade behind white children in literacy and 1/2 a grade behind in math. Hispanic children fared even worse, entering kindergarten about 1/3 a grade behind white children in literacy and 2/3 of a grade behind in math. Most strikingly, children at the 10th percentile entered kindergarten about 2/3 of a grade behind children at the 90th percentile in literacy and more than a full grade behind in math. Although the 90/10 gaps in both literacy and math declined by about 10% from 1998 to 2010, if these gaps were to continue to close at the same rate, it would take another 60–110 years for them to be eliminated entirely (Reardon & Portilla, 2016).

When considering changes over time in social and emotional learning, the evidence is mixed. Although children in the more recent cohort were somewhat less likely to exhibit negative internalizing behavior, they were *more* likely to exhibit poor self-control.

The white-black gap in interpersonal behavior declined across this period, but the white-Hispanic gap in self-control *expanded*. All of these differences over time were relatively small, and it's not clear that they are substantively meaningful. However, it *is* clear that student approaches to learning have gotten worse over time. Although race/ethnicity and income-based gaps on this measure have narrowed, this is due to disproportionately large decreases among white and higher-income children.

The trends in student approaches toward learning are troubling. This may be an indication that additional focus on academic instruction has led to declines in other important skills or that classrooms are not as engaging for students as they had been in the past. However, the interpretation of these trends is complicated by the fact that these outcomes were assessed by kindergarten teachers, and kindergarten classrooms changed dramatically across the 12-year period. Kindergarteners now experience substantially more teacher-directed whole class instruction and less time devoted to child-selected activities (Bassok, Latham, & Rorem, 2016). In this more structured environment, it may be that children cannot demonstrate their approaches toward learning in the same way.

Finally, this chapter documented some negative trends in children's health. Chief among these is that both the rates of childhood overweight and obesity have increased about 2 percentage points across this period. These increases have disproportionately occurred among low-income, black, and Hispanic children. Most strikingly, the 90/10 overweight and obesity gaps nearly *doubled* across this period such that in 2010 the lowest-income children were over 1.5 times more likely to be overweight than the highest-income children and more than twice as likely to be obese. Given that overweight children are far more likely to continue to be overweight throughout their lives (Kelly et al., 2013), this early gap in weight is likely to lead to a lifetime of health disparities.

The percentage of children born preterm and low birthweight also increased substantially over this period. This trend may indicate that the health of children and mothers has declined, but it may also reflect better access to health insurance and health care. For instance, the State Children's Health Insurance Program (CHIP) extended health insurance to young children from low-income families. However, this would not explain why the 90/10 gap on these measures has remained stable over time. Another possibility is that increases in low birthweight and preterm births may instead reflect advances in medical care, such that preterm and low birthweight infants are now more likely to survive.

Implications for Policy and Practice

The increases in student skills suggest that investments in early childhood may be effective, and early childhood education continues to be a strong focus among policymakers. In addition to state investments in preschool, federal initiatives such as Preschool Development Grants and the Race to the Top – Early Learning Challenge initiative have awarded over $2 billion to states since 2011, to expand and improve the quality of the early child care sector (US Department of Education, 2016). These initiatives have bolstered the use of both kindergarten readiness assessments and early childhood quality rating systems. Applicants are also required to demonstrate an explicit focus on promoting school readiness for children with high needs.

Changes to student skills at kindergarten entry have important implications for instruction in the kindergarten classroom. Although, in the past, many kindergarten

teachers expected that children would learn these skills in kindergarten (Abry, Latham, Bassok, & LoCasale-Crouch, 2015), teachers increasingly expect children to arrive in kindergarten with exposure to language and literacy (Bassok, Latham, & Rorem, 2016). Despite this, recent work suggests that kindergarten teachers spend most of their time teaching material that children have already mastered (Engel, Claessens, Watts, & Farkas, 2016). Further, the authors find that children learn most when exposed to novel material. This points to the importance of both understanding the skills children bring to the classroom and tailoring classroom instruction to meet these needs. However, teachers need help meeting children where they are, and the recent trend toward implementing widespread kindergarten readiness assessments may help them to do so.

Overall, the changes documented in this chapter are encouraging in some ways and discouraging in others. They suggest that recent investments in early childhood may have been successful at improving children's academic skills. However, it is crucial to understand that success in school relies on a broad array of skills, beyond just ability in language and math. As the early childhood period continues to garner attention from researchers, practitioners, and policymakers, it is important to pay attention to all aspects of school readiness and to make sure that improvements in one area don't crowd out improvements in others.

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Part II
Understanding Kindergarten Transitions for Specific Groups of Children

Effective Transitions to Kindergarten for Children with Disabilities

Caroline Gooden and Beth Rous

Abstract This chapter examines the transition process to kindergarten for children with disabilities, from those who are medically fragile to those who have language delays. Overall, while transition process and practices for children with disabilities are similar as for their typically developing peers (Rous. (2008). *Recommended transition practices for young children and families: Results from a national validation survey* (Technical Report No. 3). Lexington: University of Kentucky, Human Development Institute, National Early Childhood Transition Center. Available at http://www.hdi.uky.edu/nectc/NECTC/Publications/papers.aspx), the transition experience is often more intense and varied (e.g., (Daley, T.C., Munk, T., & Carlson, E. (2011). *Early Childhood Research Quarterly, 26*, 409–419); (Dockett, S., & Perry, B. (2004). *International Journal of Early Years Education, 12,* 217–230); (Hanson, M.J., Beckman, P.J., Horn, E., Marquart, J., Sandall, S.R., Greig, D. (2000). *Journal of Early Intervention, 23,* 279–293); (Janus, M., Kopechanski, L., Cameron, R., & Hughes, D. (2008). *Early Childhood Education Journal, 35*, 479–485)). Transitions to kindergarten often require the cooperation of persons from multiple programs and diverse early care settings; the need for specialized services for children with disabilities can significantly increase the number and nature of staff who are involved in this process. This chapter examines four components of kindergarten transition processes for children with disabilities. We begin by considering the outcomes of successful transition practice: positive outcomes for children, families, and teachers. To undergird this discussion, we present an expanded conceptual model for transition and review key transition elements and barriers to those elements that continue to be problematic. Based on the latest research, we present evidence-based practices to inform improved transitions and conclude with an examination of resultant policy implications.

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This chapter examines the transition process to kindergarten for children with disabilities (CWD) for the full range of children from those who are medically fragile to those who have language delays. Transitions for young CWD have been studied in considerable detail since national legislation was passed in 1976 (Education of the Handicapped Act, 1975), with subsequent mandates (IDEA, 1990, 1991, 2004) and practice changes (Copple & Bredekamp, 2009; Sandall, Hemmeter, Smith, & McLean, 2005). This chapter focuses on recent research for effective transitions to kindergarten for CWD, as barriers to this process continue to be a concern. The overarching message for professionals who work with CWD is that the transition to kindergarten is similar in both process and practice as for typically developing peers (Rous, 2008). However, CWD often experience *more intense and varied* transition challenges (Daley, Munk, & Carlson, 2011; Dockett & Perry, 2004; Hanson et al., 2000; Harbin, McWilliam, & Gallagher, 2000; Janus, Kopechanski, Cameron, & Hughes, 2008; Kemp, 2003). Transitions to kindergarten often require the cooperation of persons from multiple programs and diverse early care settings. For CWD and their families, the need for specialized services and supports significantly increases the number and nature of staff who are involved in this process.

This chapter examines four components of kindergarten transition processes for CWD. We begin by considering the outcomes of successful transition practice: positive outcomes for children, families, and teachers. To undergird this discussion, we present an expanded conceptual model for transition. Within that model, we review key transition elements and barriers to those elements that continue to be problematic. Based on the latest research, we present evidence-based practices (EBPs) to inform improved transitions and conclude with an examination of resultant policy implications.

Outcomes

To begin with the end in mind (Covey, 1989), our discussion of transitions for CWD considers the outcomes for key persons in the process—children, families, and teachers. Prior research has identified outcomes for children and families in transition (Harbin, Rous, Peeler, Schuster, & McCormick, 2007; Rous, Hallam, Harbin, McCormick, & Jung, 2007a). We have added outcomes for teachers, as one of the key drivers of the transition process for young CWD.

Child Outcomes

Prior research and recent legislation have identified outcomes that measure child growth, which can indicate whether transitions for CWD are successful. These outcomes range from goals in specific developmental domains (i.e., social, cognitive, language, self-care, motor) to global child functioning. Measurement of broad outcomes for CWD has received considerable attention in recent years. The Office

of Special Education Programs (OSEP) instituted child outcome measurement for CWD aged birth to 5 years in 2005 (Early Childhood Outcomes (ECO) Center, 2005). OSEP's child outcomes were developed through an iterative stakeholder process and include (1) social skills with self, peers, and adults, (2) the acquisition of knowledge and skills (cognition, communication, math, literacy), and (3) the child's ability to meet his/her own needs (ECO Center, 2009). While this child measurement approach is controversial (Rosenberg, Elbaum, Rosenberg, Kellar-Guenther, & McManus, 2017), it is the current national model and informs our expanded framework. In addition, research indicates that child outcomes need to be assessed within a specific window of time (Harbin et al., 2007; Pears et al., 2014) ranging from 12 weeks (Rous, Hallam, et al., 2007a) to 1 year (Prigg, 2002) before, during, and after the transition.

While relatively few studies have measured child outcomes in relation to transition practice, evidence indicates that children's social and cognitive skills, including their abilities to adapt to new structures and cultures, are important to success in kindergarten. Children's cognitive and adaptive skills in preschool and at the beginning of kindergarten predict positive school adjustment in kindergarten (Geva et al., 2009; McIntyre, Blancher, & Baker, 2006). Teaching CWD specific behavioral, social, and cognitive skills prior to kindergarten improved kindergarten outcomes (Kemp, 2003; Kemp & Carter, 2000; Pears et al., 2013; Pears, Kim, Healey, Yoerger, & Fisher, 2015). Instruction in preparation for the next setting, including engagement and communication skills, also facilitated children's adjustment (Gamel-McCormick & Rous, 2000; Prigg, 2002).

Family Outcomes

The Individuals with Disabilities Education Act (IDEA, 1990) recognized the importance of family involvement in early education (Bailey & Bruder, 2005); family empowerment theory (Turnbull, Turbiville, & Turnbull, 2000) provides the foundation for transition practice that respects and supports family values. Consistent with Harbin et al. (2007), our model supports four key family outcomes for successful transition: knowledge, facilitating child development and readiness, adaptation and meaningful participation, and self-efficacy.

First, family knowledge includes an understanding of their child's needs (Harbin et al., 2007); such knowledge empowers families to make informed decisions for their child's transition to kindergarten. Second, families need a variety of skills to help their child feel prepared for and supported during transition (Harbin et al., 2007; McConnell et al., 1998; Prigg, 2002). Effective parenting is one such skill, as families who participated in a parenting intervention program were more involved and their children had increased readiness for kindergarten (Pears et al., 2015). The third family outcome, adaptation and meaningful participation in the transition process, sets the stage for children's adaptation (Hanson, 2005; Hanson et al., 2001; Pianta & Cox, 1999), while family resistance can hinder progress (Rous & Hallam, 2006). Family adapta-

tion is facilitated by knowledge of kindergarten culture and services, as well as effective communication, advocacy, and problem-solving skills. Family engagement in the transition includes family-professional partnerships for planning, active exploration of the most appropriate kindergarten placement, and communication about assistance needed for family and child (Turnbull & Turnbull, 1997a). Finally, family self-efficacy, or the belief in their ability to be successful in the face of challenges (Bandura, 1977, 1994; Des Jardin, Eisenberg, & Hodapp, 2006; Rosenkoetter et al., 2009), allows families to have confidence in their abilities to obtain needed information, skills, and services for their child (Dunst, 1999; Dunst, Trivette, & Deal, 1994). As with child outcomes, family outcomes need to be addressed within a specific window of time (Harbin et al., 2007; Pears et al., 2014; Rous, Hallam, et al., 2007a). In summary, when families adapt to change in their children's services and actively participate in the transition process, their children have transitions that are more effective.

Teacher Outcomes

Given the increasing emphasis on the use of EBP by teachers (Buysse & Wesley, 2006; Early, Pianta, & Cox, 1999; Rosenkoetter et al., 2009; Wesley & Buysse, 2003), and to improve transition practice for CWD, we added outcomes for teachers to the expanded framework. Four teacher outcomes are posited: knowledge of and implementation of EBP, effective relationships, and self-efficacy. First, knowledge of EBP is essential to effective instructional practice (Buysse & Wesley, 2006; Copple & Bredekamp, 2009; Rosenkoetter et al., 2009; Wesley & Buysse, 2003). Teachers and families recognize the need to teach specific skills prior to entering kindergarten (Kemp, 2003). The use of developmentally appropriate practice (DAP) in Head Start related positively to children's adjustment in kindergarten (Mantzicopoulos, 2005). Focus group discussions with preschool and kindergarten teachers highlighted the importance of using DAP and increased scientific rigor in studies of CWD (Buysse &Wesley, 2006; Wesley & Buysse, 2003).

Second, the improvement science (IS) framework (Langley et al., 2009) suggests that implementation of EBP requires individualized knowledge that is facilitated through training and coaching (Hamre et al., 2012; Kemp, 2003; Kemp & Carter, 2000; LoCasale-Crouch, Mashburn, Downer, & Pianta, 2008). Many studies indicate positive effects from individualized EBP prior to and during the transition to kindergarten. After a 14-week course, teachers more accurately identified effective teacher-child interactions and more effectively implemented emotional and instructional interactions (Hamre et al., 2012). The National Center for Early Development and Learning (NCEDL) Multi-State Pre-Kindergarten survey found improved kindergarten teachers' perceptions of children when specific curricula or children were discussed with preschool teachers (LoCasale-Crouch et al., 2008), suggesting a need for increased personalization of transition practices (Early, Pianta, Taylor, & Cox, 2001).

Third, teachers' abilities to establish meaningful, respectful relationships with families and staff in all stages of the transition process underlie effective transitions

(Kemp, 2003; McIntyre, Eckert, Fiese, DiGennaro Reed, & Wildenger, 2007; Pianta & Kraft-Sayre, 1999; Prigg, 2002; Rosenkoetter et al., 2009). Families and teachers indicate that positive relationships are the most important factor to successful transitions and are developed over time (Kemp, 2003; McIntyre et al., 2007; Pianta & Kraft-Sayre, 1999). Communication with other staff (such as CWD's preschool teachers) is important, as non-collaborative relationships between sending and receiving staff have been shown to hinder effective transitions (Prigg, 2002).

Lastly, teacher self-efficacy for transition (Bandura, 1977, 1994; Pajares, 1992) indicates the degree to which teachers have the confidence and persistence to engage in all phases of the transition process. While preschool and kindergarten teacher general self-efficacy has been studied (e.g., Gooden, 2016; Guo, Justice, Sawyer, & Tompkins, 2011; Guo, Piasta, Justice, & Kaderavek, 2010; Hamre, Pianta, Downer, & Mashburn, 2008), no known studies have examined teacher self-efficacy specifically in relation to the transition process.

With these targeted outcomes in mind for the children, families, and teachers involved in the transition to kindergarten, we next examine an expanded framework for understanding transitions to kindergarten for CWD. We discuss the contexts that affect transitions (and thus outcomes), the elements that must be in place to reach the outcomes, and the practices that may be put in place. We also examine barriers in reaching those outcomes that continue to persist.

Expanded Conceptual Framework and Related Barriers

Based on recent review of the literature and to address continuing barriers to effective transitions for CWD, we frame this discussion with our expanded version of Rous, Hallam et al.'s (2007a) conceptual model; see Fig. 1.

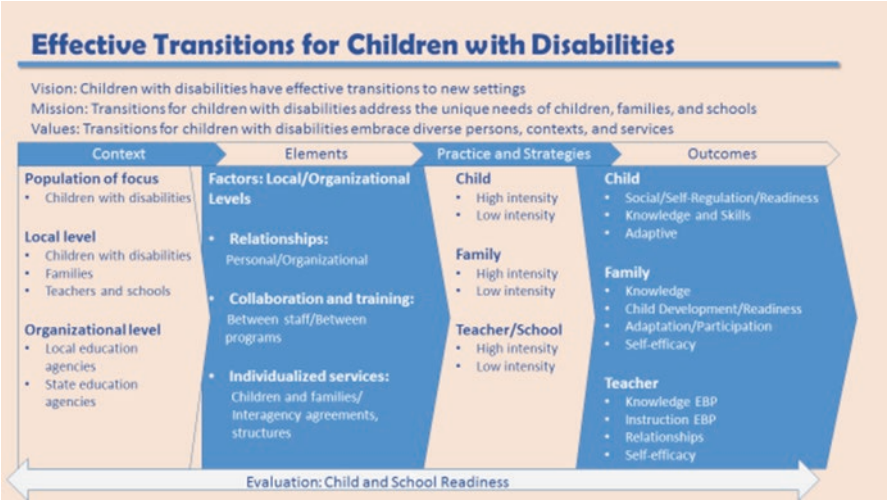

Fig. 1 Transition conceptual framework with child, family, and teacher outcomes

Theoretical Background

While our expanded framework supports transition processes across the early childhood years, this chapter focuses on its specific application to kindergarten. A number of theories undergird this framework, including bioecological (Bronfenbrenner, 1986; Bronfenbrenner & Evans, 2000; Bronfenbrenner & Morris, 1998), organizational (Shafritz, Ott, & Jang, 2004), systems (Lambert, Collay, Dietz, Kent, & Richert, 1997), family empowerment (Dunst et al., 1994; Turnbull et al., 2000) theories, and the IS framework (Langley et al., 2009). Bioecological models recognize the role of the locations within which transitions for CWD occur, including child, family, community, and state contexts (Rous & Hallam, 2012). Contexts for CWD, ranging from families' abilities to advocate, community attitudes about access to education, and state policies for special education services, influence children's access to specialized services. Dynamic interactions occur between microsystems, including child and family variables, and macrosystems, including community and larger societal factors (Bronfenbrenner, 1986; Bronfenbrenner & Evans, 2000; Bronfenbrenner & Morris, 1998; Pianta, Rimm-Kaufman, & Cox, 1999; Rimm-Kaufman & Pianta, 2000). When these systems do not work in concert for the individual needs of each child and family, disjointed services result. Organizational frameworks assist in understanding structures and change within complex organizations such as school systems (Shafritz et al., 2004). Systems theory proposes a shift from a bureaucratic to an ecological approach with an emphasis on relationships and partnerships (Lambert et al., 1997). Family empowerment theory (Dunst et al., 1994, Turnbull et al., 2000) advocates respect for diverse family values and empowerment of families through education. For families of CWD, awareness and education in the legal rights of their children in kindergarten is essential for securing appropriate services. Since effective transitions require change within and across systems, the IS framework (Langley et al., 2009) is well suited to providing mechanisms for addressing transitions. IS identifies sources of knowledge that can facilitate change in action, including basic (i.e., pertaining to specific tasks and strategies) and profound (i.e., pertaining to systems, psychology, and growth) knowledge. While transitions to kindergarten for all children benefit from communication between diverse programs, transitions for CWD require specialized knowledge by an array of sending and receiving staff.

Our expanded framework includes four components of the transition process: context, key elements, practice, and outcomes, as illustrated in Fig. 1. Child, family, and teacher outcomes have been discussed above. Below, we outline the remaining three model components.

Context

Children live in families located within distinct communities and cultures; they attend schools that fall under the jurisdiction of state and federal educational agencies. It is important to consider each contextual factor that influences the

transition process (Baughan, 2012; Bronfenbrenner & Morris, 1998; Pianta, Rimm-Kaufman, et al., 1999; Rimm-Kaufman & Pianta, 2000). The microsystem (i.e., child and family characteristics) influences educational choices for children as they enter kindergarten. Children with significant or multiple disabilities may challenge school systems with limited resources. Family attitudes and knowledge of transition options are critical to informed participation in the transition process (Harbin et al., 2007). The macrosystem, including state educational resources and larger societal attitudes, influences the transition process as local, community, and state educational personnel and policies shape available kindergarten services (Shonkoff & Phillips, 2000). In our model, consistent with bioecological and systems models (Rous, Hallam, et al., 2007a), two contextual levels are considered: local and organizational. Interactions among entities at each level affect transitions. Therefore, ensuring successful transitions to kindergarten for CWD requires collaboration between persons and programs from multiple, varying contexts.

Key Elements and Related Barriers

The second component of our framework—the key elements of the transition process—is examined with reference to persistent barriers related to each element. Based on prior conceptual models (Harbin et al., 2007; Pears, Kim, & Fisher, 2012; Pianta, Rimm-Kaufman, et al., 1999; Rimm-Kaufman & Pianta, 2000; Rosenkoetter et al., 2009; Rous, Hallam, et al., 2007a), we identify three critical elements for transitions that occur at both local and organizational levels: relationships, collaboration and training, and individualized services.

Relationships The first key element includes relationships between people, within and across programs, in the transition process. Local teacher-specific factors influence relationship building and maintenance, as do organizational policies that support within and across program communication. Communication within and across programs sets the tone for transition planning and implementation (Dunst, Hamby, Trivette, Raab, & Bruder, 2000). Organizations that have the infrastructure to ensure designated staff time for transition facilitate relationships that support the varied needs of CWD. This infrastructure can include specific transition policies, staff roles, interagency agreements that define transition responsibilities, and clear mechanisms for cross-program communication and support (Harbin et al., 2004; Harbin & Salisbury, 2000). These infrastructures are especially important for planning individualized services (e.g., therapeutic, medical, nutritional, transportation). Respectful relationships are foundational to effective service delivery during transitions (Harbin et al., 2000; Pianta & Kraft-Sayre, 2003; Pianta, Rimm-Kaufmann, et al., 1999; Rimm-Kaufman & Pianta, 2000; Rosenkoetter et al., 2009; Turnbull & Turnbull, 1997b). Characteristics of the children (e.g., nature of disability, social skills), families (e.g., financial, educational, social), teachers (e.g., knowledge, skills, attitudes), and communities (e.g., values, economics) all influence the nature of relationships that are fostered (Hanson et al., 2000; Kemp, 2003).

When transition team members communicate effectively, utilization of the entire team's expertise results in improved transition processes for each child and family.

Barriers to Effective Relationships Since kindergarten transitions for CWD involve complex arrays of staff from multiple programs, the lack of positive program-to-family relationships may present barriers to effective transitions (Harbin & Salisbury, 2000; Kemp, 2003; Rosenkoetter et al., 2009; Rous, Myers, & Stricklin, 2007b; Rous, Schroeder, Stricklin, Hains, & Cox, 2008). CWD may require consultation between specialized support staff (such as medical, behavioral, or communication specialists) and family members (Janus et al., 2008; Rous et al., 2008; Wolery, 1999). Individualized family support is necessary to build relationships, plan services, provide education for advocacy, and address family fears (Janus et al., 2008; Pianta, Cox, Taylor, & Early, 1999; Rous, Myers, et al., 2007b; Rous et al., 2008). However, program-to-family relationships can be difficult to initiate and maintain. Preschool and kindergarten staff may not understand individualized child services, especially when staff changes occur (McLeskey, Tyler, & Flippin, 2004; Rous, Myers, et al., 2007b; Rous et al., 2008; Turnbull & Turnbull, 1997a). Staff shortages (such as in rural areas, for therapies, or in children's native languages) may result in inconsistent relationship building or teachers who are inadequately prepared to collaborate. Further, personalized family support (e.g., home visits, flexible meeting times, communication in family's language) may be lacking in some programs for families who work, live in poverty, are from diverse cultures, or have children with significant disabilities (Rous et al., 2008).

Collaboration and Training The second key element of our framework is collaboration and training within and across programs, which facilitates continuity and alignment of services from sending to receiving programs (Rous, Hallam et al., 2007a). Sending programs include prekindergarten (pre-k) public and private agencies that serve CWD, such as preschools, therapy offices, and homes. Receiving programs include public and private kindergarten classrooms. At the local level, collaboration involves multiple methods of communication (i.e., personal contact, meetings, training) to support continuity of services during transition. Cooperative training and cross-program visitation (i.e., pre-k teachers visit kindergarten classes) increases opportunities for program alignment and continuity (Pianta & Kraft-Sayre, 2003; Wesley & Buysse, 2003). Knowledge of sending and receiving program staff is especially important for CWD, so that sending teachers have accurate information about kindergarten practices and receiving teachers have realistic expectations of the strengths and needs of their incoming children. At the organizational level, collaboration and training are most consistent when written policies and procedures ensure EBP for transition. Memorandums of agreement between sending and receiving programs facilitate the implementation of EBP for transition. While programs do not have to adopt the same curricula, it is important that they align their practices so that sending staff teach skills that promote success in kindergarten (i.e., navigating hallways, eating in cafeterias) and that receiving teachers implement EBPs that are effective for CWD.

Barriers to Collaboration and Training Barriers that hinder collaboration and training for kindergarten transitions persist at both local and organizational levels. Factors impeding collaboration include shortages in staffing, preparedness, curricular alignment, and funding. Staffing barriers include a lack of designated transition staff from sending and receiving programs, as well as shortages of specialized personnel (Harbin et al., 2000; Pianta, Cox, et al., 1999; Rous et al., 2008; Valeo, 2003). There may be fewer kindergarten staff who are trained to work with children with diverse needs or have access to child information before the start of school (Early et al., 2001; Harbin et al., 2000; Pianta, Cox, et al., 1999; Turnbull & Turnbull, 1997a; Rous et al., 2008; Wolery, 1999). Especially for children with complex medical needs, inadequate collaboration may result in duplicate assessments, inadequate family support, failure to make appropriate referrals, or misaligned curricula (Harbin & Salisbury, 2000; Janus et al., 2008; Rous, Myers, et al., 2007b; Rous et al., 2008; Troup & Malone, 2002). Successful transition planning requires specialized staff who can implement needed services in kindergarten (e.g., tracheostomy care). Funding barriers related to collaboration include inadequate funds for staff to prepare for CWD over the summer, to attend meetings, or to complete necessary paperwork (Early et al., 2001; Janus et al., 2008; Pianta, Cox, et al., 1999; Rous et al., 2008; Rous, Hallam, McCormick, & Cox, 2010; Wolery, 1999).

Barriers related to training include inadequate pre- and in-service sessions that address the range of educational needs of incoming children. Many regular education kindergarten staff report that they do not receive training in transition processes or methods to prepare them to teach CWD (Early et al., 1999, 2001). Staff from sending and receiving programs benefit from training sessions that describe transition procedures, designated transition staff in all programs, and available special education resources (Early et al., 1999, 2001; Rosenkoetter et al., 2009; Rous et al., 2008). Cross-program trainings (i.e., trainings attended by sending and receiving staff) allow staff to meet, develop relationships, align curricula and expectations, and build transition services together. Without such collaboration, discontinuity of services often results (Rous et al., 2008; Wolery, 1999).

Individualized Services The third key element for effective transitions for CWD is the provision of individualized services. Unlike planning for children without disabilities, uniform transition goals are not appropriate; planning must address the specific needs of each child and family. Individualized services involve the preparation of children and families before a change in setting as well as adjustment after transition (Pears et al., 2012; Prigg, 2002; Rous, Hallam et al., 2007a). Locally, preparation may include visits to the receiving school, structured time in the kindergarten classroom, room arrangements that allow for easy movement of wheelchairs, and time for family members to meet other families and staff. Adjustment activities after transition may include weekly family-teacher calls, labeled photographs of children and staff, posted visual schedules, and storyboards of special events. At the organizational level, written policies and agreements that stipulate the roles and responsibilities of persons involved in the transition process

support individualized services. Written agreements ensure the rights of each team member and program, including program policies that specify that confidential child information is kept according to Family Educational Rights and Privacy Act (FERPA, 1974) regulations.

Barriers to Individualized Services A critical barrier to effective transitions is local and organizational lack of preparedness to provide individualized services. Locally reported barriers include inadequate services for children with significant disabilities, family beliefs about disability that differ from those of educational systems, large kindergarten classes, and changes in the frequency and intensity of services (Early et al., 2001; Janus et al., 2008; LaParo, Pianta, & Cox, 2000; Rosenkoetter, Whaley, Hains, & Pierce, 2001; Rous et al., 2008, 2010). For local staff, providing individualized services is difficult when few are trained to serve children with significant disabilities and specialized needs (Rous et al., 2008). Local staff also report not having information on children prior to the start of school, which prevents advance planning for special needs such as augmentative communication systems, adaptive equipment, and modified room arrangements (Early et al., 2001; Pianta, Cox, et al., 1999; Rous et al., 2008). At the organizational level, barriers to transition for children with complex needs include inadequate district planning for individualized services, inflexible meeting schedules, inadequate staffing, and inadequate support services (Early et al., 2001; Janus et al., 2008; Pianta, Cox, et al., 1999; Rous et al., 2008). When organizations do not provide mechanisms to provide individualized support for children's needs, responsive programming is limited.

Effective Transition Practice

The third component of our framework, and the heart of improved services for CWD, is the implementation of EBP for children who are entering kindergarten. The mandate for accountability emphasizes the need for EBPs that are supported by rigorous research (Buysse & Wesley, 2006; McLean, Snyder, Smith, & Sandall, 2002; Rosenkoetter et al., 2001; Rous et al., 2010). Educational practice includes policies, approaches, and activities that achieve positive changes in children's attitudes or academic behaviors (Arendale, 2016). We use the term "practice" to denote a broad, global element of transition planning and "strategy" to indicate specific activities used to implement a practice (Rous, 2008). IS provides a framework for the successful selection and implementation of EBP as children transition to kindergarten. As Langley et al. (2009) describe, effective educational practice includes the identification of basic and profound knowledge of transition processes. Basic knowledge includes the timelines and persons for transition planning, whereas profound knowledge may include curricular materials to support children with visual impairments in kindergarten.

Transition practices first may be considered according to whom they apply: children, families, or teachers (Rous et al., 2010). These practices include child prepara-

tion and adjustment, family needs and skills, and sending and receiving teacher knowledge and skills (Rous, Myers, et al., 2007b; Rous, 2009). Unlike transitions for children without disabilities, staff may need to implement EBP for children with a range of varied needs such as sensory, cognitive, motoric, or language impairments. Staff also need to work with children's families to address multiple needs and to ensure consistency between home and other settings (Rous et al., 2008).

Secondly, EBP and strategies may be considered in terms of their intensity. High-intensity practices involve greater time and effort to address individual needs, while low-intensity practices are less specific and used with groups of children and adults (Baughan, 2012; Daley et al., 2011; Pianta, Cox, et al., 1999; Rous et al., 2010; Rous & Mawdsley, 2016). Program intensity is a critical factor in ensuring that services improve long-term outcomes for CWD (Ramey & Ramey, 1998). Most studies found that low-intensity strategies were used more frequently (Daley et al., 2011; Markowitz et al., 2006). Using nationally representative Pre-Elementary Longitudinal Study (PEELS) data, Daley et al. (2011) examined teachers' use of practices for each CWD who entered kindergarten during 2003–2004. The most frequently reported practices were all low-intensity: receipt of previous records, encouraging families to meet staff, having the child and family visit kindergarten, and providing parents with information. Children in special education classrooms received significantly more high-intensity practices than did children in regular education classrooms. Similarly, in the NCEDL (1996), teachers most often used the low-intensity strategies of reading individual child records and contacting preschool teachers for information rather than using individualized, high-intensity approaches for CWD (LaParo et al., 2000).

Studies specifically targeting CWD were more likely to find use of high-intensity practices. In a social validation study of administrators, teachers, and families, the most frequently validated practices included establishing interagency relationships, having guidelines for transition, ensuring family participation in meetings, and conducting program visitations (Rous, Myers, et al., 2007b). Highly valued practices included providing teachers with information on the transition process, gathering teachers' input in the development of special materials, and listening to families' concerns (Tepe, 2012). Surveys of public preschool teachers of CWD in the USA and Ghana found the use of individualized practices prior to transition and more coordinated practices to address children's complex needs (Denkyriah & Agbeke, 2010; Rous et al., 2010). Structured kindergarten classrooms represented a greater barrier for CWD; while kindergarten teachers valued individualization, they often did not implement individualized, high-intensity practices (Troup & Malone, 1999, 2002).

To facilitate improved implementation of EBP, we now present recommended practices according to the agent of the process (i.e., child, family, teacher or school) and the intensity of the practice, including research-based sources for each practice; see Table 1. We also list sample high- and low-intensity strategies to support implementation of each practice. We recommend the use of IS principles to develop additional individualized strategies that develop basic (i.e., specific practices) and profound knowledge (i.e., program-level policies) in a systematic, intentional manner.

Table 1 Transition practice and strategies by category and intensity of implementation

Practice and strategies for children
1. *Develop social competence (peer relationships, follow rules) for kindergarten* (Daley et al., 2011; Kemp & Carter, 2000; Prigg, 2002; Rous, 2008, 2009; Troup & Malone, 1999)
High-intensity strategies:
Children receive developmentally appropriate assessments to assess social skills needed for kindergarten
Children attend pre-k programs with developmentally appropriate curriculum that support social skill development for kindergarten
Low-intensity strategies:
Children attend public group events (story hour, gym classes, play groups) to practice social skills needed for kindergarten
2. *Develop functional survival skills (follow directions, work independently, participate in groups, use variety of materials) for kindergarten* (Daley et al., 2011; Kemp & Carter, 2000; Pears et al., 2014, 2015; Prigg, 2002; Rous, 2008, 2009; Troup & Malone, 1999)
High-intensity strategies:
Children attend summer enrichment programs
Children participate in pre-k intervention programs
Low-intensity strategies:
Children attend public group events (story hour, gym classes, play groups) to practice survival skills needed for kindergarten
3. *Develop familiarity with the next environment* (Kemp & Carter, 2000; Quintero & McIntyre, 2011; Rous, Myers, et al., 2007b; Tepe, 2012; Wolery, 1999)
High-intensity strategies:
Children visit kindergarten individually with family or providers
Low-intensity strategies:
Children attend group school visitation days in spring prior to kindergarten
Practice and strategies for families
1. *Actively participate in the design of transition processes* (Early et al., 2001; Pianta, Cox, Taylor, & Early, 1999; Rous, 2008, 2009)
High-intensity strategies:
Families participate in school-based meetings to determine transition services, policies, procedures, timelines
Low-intensity strategies:
Families attend school-based meetings where transition policies and procedures are reviewed
2. *Participate in family-school partnerships* (Janus et al., 2008; McIntyre et al., 2007; Rous, Myers, et al., 2007b; Wolery, 1999)
High-intensity strategies:
Families actively participate in decision-making for individual child and school-based policies
Low-intensity strategies:
Families attend school-based meetings with school staff and administrators
3. *Have information needed to participate in development of transition plans* (Denkyriah & Agbeke, 2010; LaParo et al., 2000; Prigg, 2002; Quintero & McIntyre, 2011; Rosenkoetter et al., 2001; Rous, 2009; Rous, Myers, et al., 2007b; Tepe, 2012; Wolery, 1999)

(continued)

Table 1 (continued)

High-intensity strategies:
Families actively participate with their child's school team to gather information for individual child transition planning (i.e., assessment, IEP development)
Families attend informational sessions to learn about the legal rights of their child in kindergarten
Low-intensity strategies:
Families attend public meetings on transition to kindergarten
Families attend public meetings on legal rights related to transition
Families visit websites that address child and family needs for transition
4. *Develop familiarity with next environment* (Denkyriah & Agbeke, 2010; LaParo et al., 2000; Rous, 2009; Rous, Myers, et al., 2007b)
High-intensity strategies:
Families visit kindergarten individually with their child
Low-intensity strategies:
Families attend kindergarten open house
Families attend group visitation days in spring prior to kindergarten
5. *Assess and address transition needs* (Nieves, 2005; Rous, 2009)
High-intensity strategies:
Family needs and fears for transition assessed individually by kindergarten staff
Family needs and fears for transition addressed in child's individual transition plan
Low-intensity strategies:
Families attend school information sessions on transition processes
Families attend kindergarten open house
Practice and strategies for teachers and schools
1. *Connect with families and children before and after kindergarten starts* (Baughan, 2012; Denkyriah & Agbeke, 2010; LaParo et al., 2000; Quintero & McIntyre, 2011; Rous, 2009; Rous et al., 2010; Tepe, 2012)
High-intensity strategies:
Make individual phone calls to families and children
Send individual emails to families and children
Make home visits with families and children
Actively participate in individual transition meetings
With parental consent, connect pairs of children and families prior to school starting
Low-intensity strategies:
Attend kindergarten open house with families and children
Read sending and receiving program websites
Send group electronic "back pack" to incoming children and families (in native language) including welcoming information, teacher names, school pictures
2. *Connect staff from sending and receiving programs* (Early et al., 2001; Janus et al., 2008; LaParo et al., 2000; McIntyre et al., 2007; Rosenkoetter et al., 2001; Rous, 2008, 2009; Rous et al., 2010; Rous, Myers, et al., 2007b; Tepe, 2012; Troup & Malone, 1999)
High-intensity strategies:
Designate transition contact person at each sending and receiving program
Meet individually with staff within and across sending and receiving programs

(continued)

Table 1 (continued)

Make phone calls and email staff within and across sending and receiving programs
Participate in cross-program transition planning meetings
Participate in cross-program training on transition processes and individual child needs
Visit community pre-k settings
Participate in community-wide teacher exchange week, with designated days for pre-k teacher visits to kindergarten and kindergarten teacher visits to pre-k
Low-intensity strategies:
Send group emails about transition to staff within and across sending and receiving programs
Attend open houses at sending and receiving programs
Send electronic "back pack" to sending and receiving programs including welcoming information, teacher names, school pictures
3. *Be informed about children's history and needs* (Division for Early Childhood, 2014; LaParo et al., 2000; Rous, 2009; Rous et al., 2010; Tepe, 2012)
High-intensity strategies:
With family consent, send written records on individual transitioning children
Meet with staff and family to discuss individual child strengths and needs
Develop and send "Meet Me" books on individual children's strengths and needs
Low-intensity strategies:
Read written records on incoming children
4. *Develop children's readiness for kindergarten* (Daley et al., 2011; Kemp & Carter, 2000; Pears et al., 2015; Prigg, 2002; Rous, 2008, 2009; Troup & Malone, 1999)
High-intensity strategies:
Teach developmentally appropriate skills to each child entering kindergarten
Implement readiness intervention programs for at-risk children who are entering kindergarten
Low-intensity strategies:
Teach developmentally appropriate social and pre-academic skills in pre-k settings
Distribute fact sheets on developmentally appropriate child milestones and readiness materials at open houses and community events
Send group electronic "back pack" to incoming children and families including kindergarten readiness information
5. *Align curriculum and child expectations in a collaborative, transparent manner* (Ahtola et al., 2011; LaParo et al., 2000; Quintero & McIntyre, 2011; Rosenkoetter et al., 2001; Rous, 2009; Rous, Myers, et al., 2007b; Troup & Malone, 2002; Wolery, 1999)
High-intensity strategies:
Meet with staff from sending and receiving programs to study and select developmentally appropriate curriculum and child expectations for all programs
Develop memorandums of agreement (MOAs) outlining selected curriculum
Low-intensity strategies:
Attend cross-program meetings and training on curricula
Send cross-program group emails with curricular ideas and updates
6. *Develop and implement individualized transition plans for each child/family* (Daley et al., 2011; Early et al., 2001; Quintero & McIntyre, 2011; Rous, 2008, 2009)

(continued)

Table 1 (continued)

High-intensity strategies:
Develop individualized transition plans for every entering child
Implement individualized transition plans for every child
Make adaptations in kindergarten rooms (i.e., mobility, materials, augmentative communication methods) to accommodate every child
Low-intensity strategies:
Attend trainings on development of appropriate transition plans
7. *Establish cross-program infrastructure to support transition planning and implementation* (Denkyriah & Agbeke, 2010; Quintero & McIntyre, 2011; Rous, 2008, 2009; Rous, Myers, et al., 2007b)
High-intensity strategies:
Allocate staff time to plan and prepare for transitions, including summer work
Designate transition point persons in all programs
Delineate all staff roles relative to transition activities
Develop MOAs outlining transition responsibilities and deliverables for all programs
Low-intensity strategies:
Attend trainings on transition policies and procedures
Send group emails with updates on infrastructure updates
8. *Identify clear referral, eligibility, enrollment processes and timelines* (Rous, 2008, 2009; Wolery, 1999)
High-intensity strategies:
Sending and receiving staff plan and prepare transition policies for referral, eligibility, and enrollment
Cross-program staff ensure that established policies minimize disruptions in service before, during, and after transition
Low-intensity strategies:
Distribute electronic fact sheets on each program's referral, eligibility, and enrollment policies
9. *Actively participate in the design of transition processes* (Rous, 2009; Tepe, 2012)
High-intensity strategies:
Staff actively participate in meetings to determine transition services, policies, procedures, timelines
Low-intensity strategies:
Staff attend trainings on transition policies and procedures
10. *Develop and implement transition EBP* (Pianta & Kraft-Sayre, 2003; Quintero & McIntyre, 2011; Rosenkoetter et al., 2001; Rous, 2008, 2009; Rous, Myers, et al., 2007b)
High-intensity strategies:
Staff actively participate in meetings to develop transition practice and strategies
Staff participate in training to learn individual approaches for incoming children
Teachers receive coaching from experienced staff in transition policy and specific child needs
Low-intensity strategies:
Staff attend cross-program training on transition practice and strategies
Send group emails with EBP updates

Conclusions

We conclude this discussion of transition to kindergarten for CWD with considerations for future policy and practice. Based on our review, three targeted areas for improvement in transition policies and practice emerged. These critical areas include increases in collaborative practices to address decreased funding, further identification of best practices, and the need for engaging training in both general and specific transition practices.

First, it is important to note that state spending on pre-k programs has recently declined despite increased enrollment of preschool children (Barnett, Epstein, Friedman, Sansanelli, & Hustedt, 2009; Barnett, Hustedt, Friedman, Boyd, & Ainsworth, 2007; Rous et al., 2010). Programs that were already hard-pressed to provide comprehensive transition services have increasing numbers of children in need of such services. In addition, programs that have finite enrollment capacity may be serving less than the full population of eligible at-risk children or CWD; for example, Head Start serves fewer than 60% of all eligible children nationally (Barnett et al., 2009). With declining resources and growing enrollment, collaborative practices are critical to provide needed transition services for CWD entering kindergarten.

IS (Langley et al., 2009) offers specific strategies to address the second critical area for improvement: identifying and implementing best practices (Daley et al., 2011; Rosenkoetter et al., 2009; Rous & Hallam, 2012; Rous, Hallam, et al., 2007a). Sending and receiving programs need to identify basic knowledge of EBP for the children in their programs, including practices that assist children's movement from pre-k to kindergarten. Local pre-k and kindergarten programs may implement increased numbers of low-intensity EBPs, such as participating in teacher exchange days, emailing welcoming messages before and after school starts, and sending electronic backpacks to all incoming kindergarteners. Further, local programs need to determine individualized procedures for each of these practices. For example, a local district may schedule the first week of April for teacher exchange days in all sending pre-k and receiving kindergarten classes. The schedule for when teachers visit other programs (e.g., Head Start to kindergarten on Monday, kindergarten to state-funded preschool on Tuesday) and the procedures for staff contacts and coverage at each program need to be established. The use of IS has great promise to implement improvement in transition practice, with its emphasis on the development of basic and profound knowledge for the most effective practice (Lewis, 2015).

Lastly, there is a critical need for improved training in both general and individualized transition practice for CWD (Rosenkoetter et al., 2001; Rous et al., 2010). Training in specific transition practices must reflect the needs of local programs. Designated staff with dedicated time for transition activities are prerequisites for the development of effective training materials (Rous, Myers, et al., 2007b). Training sessions in areas such as augmentative communication, mobility and orientation, and auditory amplification are essential for successful transitions. As diverse transition needs increase, and as available funding streams decrease, innovative stakeholder-based solutions are critical for CWD as they enter kindergarten.

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Recognizing and Addressing the Effects of Early Adversity on Children's Transitions to Kindergarten

Katherine C. Pears and Emily Peterson

Abstract Children who have experienced early adversities such as maltreatment, high mobility/homelessness, or low socioeconomic status may have difficulties with the transition to kindergarten. This is particularly likely because these children demonstrate deficits in academic, social, and self-regulatory school readiness skills prior to kindergarten entry. Such deficits may result from the negative impacts of early adversity on children's early learning environments and their neurobiological functioning, as well as negative effects on their caregivers. However, there are ways in which to address these negative influences of early adversity and thus increase the chances of smooth and positive kindergarten transitions for these children. Such interventions include targeted programming to increase school readiness skills, the use of transition practices that engage caregivers, and teacher awareness of techniques that can help to manage children's behaviors and increase their self-regulation skills. The effects of early adversity are malleable and thus can be addressed to improve children's transitions and subsequent trajectories.

The experience of early adversity can have a number of long-lasting negative effects for children, including physical, social, emotional, and mental health symptoms (Baram et al., 2012; Lovallo, Farag, Sorocco, Cohoon, & Vincent, 2012; Shonkoff et al., 2012; Szepsenwol, Simpson, Griskevicius, & Raby, 2015; Taylor, Way, & Seeman, 2011). Although there is a range of possible sources of adversity in early childhood—the period from 0 to 5 years—three of the most widespread are the experiences of low socioeconomic status (SES; including poverty), high residential mobility (including homelessness), and maltreatment (Shonkoff et al., 2012). Because one adversity may often engender others—e.g., poverty may lead to the loss of stable housing—many children simultaneously experience multiple hardships (Lanza, Rhodes, Nix, & Greenberg, 2010). The effects of early adversity are pervasive, touching many different levels of a child's life, including not only the child but also their caregivers and learning environments. Those effects then can have cascading and long-term impacts on other areas of the child's life, such as school achievement and adjustment.

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Children from low SES backgrounds, those who experience high mobility and/or homelessness, and those who have been maltreated consistently demonstrate deficits in academic, social, and self-regulatory school readiness skills prior to kindergarten entry (Bulotsky-Shearer, Dominguez, & Bell, 2012; Entwisle, Alexander, & Olson, 1997; Pears, Heywood, Kim, & Fisher, 2011; Tran & Winsler, 2011). Such early gaps persist over time; children in these groups demonstrate lower academic achievement, higher likelihoods of special education placement, higher rates of behavioral difficulties, and higher rates of suspension across the school years (Ackerman, Brown, & Izard, 2004; Fantuzzo, LeBoeuf, Chen, Rouse, & Culhane, 2012; Herbers et al., 2012; Scherr, 2007). These patterns of academic failure and behavioral problems can translate into lower rates of high school graduation and lower educational attainment overall (Pecora et al., 2006; Rumberger, 2010). For example, children from low SES backgrounds are eight times less likely to complete college than those from higher SES backgrounds (Rumberger, 2010). These gaps in educational attainment can contribute to lower earnings that further perpetuate cycles of intergenerational poverty and psychosocial difficulties (Duncan, Ziol-Guest, & Ariel, 2010; Restuccia & Urrutia, 2004; Reynolds & Ross, 1998).

Although early adversity can have many negative impacts on children, research has shown that the cycle of negative effects can be broken, and sometimes reversed, through intervention (Almas et al., 2012; Dozier, Peloso, Lewis, Laurenceau, & Levine, 2008; Fisher, Stoolmiller, Mannering, & Chamberlain, 2011; Nelson et al., 2007). In order to help children who have experienced early adversity from the very start of their formal schooling, it is necessary to understand the pathways by which such adversity affects children's school readiness. Additionally, because the child is embedded within multiple systems (e.g., the family, school, community, and even social service systems), it may be necessary to intervene at multiple levels in order to be most effective. In this chapter, we explore some of the ways in which these three common sources of early adversity can affect children's transitions to kindergarten. Furthermore, we explore the implications for educators and how they may ameliorate the negative effects of early adversity on the outcomes of children with whom they work.

How Early Adversity Affects School Readiness

Some of the most widely used theories of development and school transition recognize that a child is affected by multiple factors both internal (e.g., temperament and biological systems) and external (e.g., the family, peers, and the environments in which a child interacts with others) (Bronfenbrenner, 1989; Rimm-Kaufman & Pianta, 2000). Consistent with these models, early adversity has the potential to affect children's school readiness—not only through its direct negative impacts on the children's skills but also on children's early learning environments, their caregivers, and their neurobiological systems. Figure 1 presents a conceptual model of some of the proposed pathways through which early adversity affects school

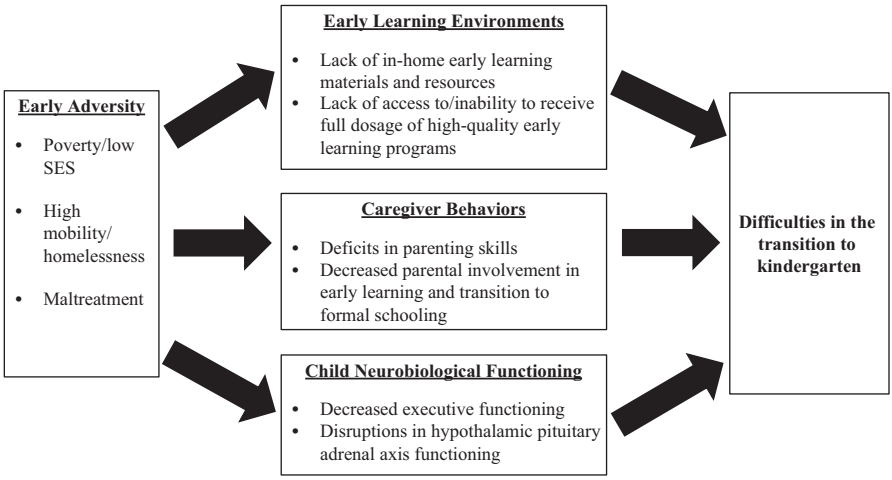

Fig. 1 Conceptual model of the effects of early adversity on the transition to kindergarten

readiness. Below, we discuss how early adversity affects each intermediate factor and what effects this may subsequently have on children's kindergarten transitions.

Impacts of Early Adversity on the Early Learning Environment

At the environmental level, children living in adverse circumstances are unlikely to be exposed to the materials and experiences that have been shown to support their early learning (Aviles de Bradley, 2008; Chazan-Cohen et al., 2009; Larson, Russ, Nelson, Olson, & Halfon, 2015). For example, the availability of educational resources in the home, such as books and other print materials and computers, is a robust predictor of reading abilities across multiple cultural and ethnic groups (Chiu & Chow, 2015). Steep gradients in the availability of these resources across income groups demonstrate that children from families with the lowest SES have the least exposure to such materials (Larson et al., 2015; Schick & Melzi, 2016).

The availability of high-quality preschool experiences appears to have positive effects on children's academic and social outcomes in school longitudinally and may continue to affect outcomes in adulthood (Heckman, 2006; Ramey & Ramey, 2004; Reynolds, Magnuson, & Ou, 2010). As with access to educational materials in the home, there are clear differences in usage of high-quality, center-based preschool experiences by income groups, such that children from lower SES backgrounds are significantly less likely to attend high-quality programs in the year before kindergarten (Larson et al., 2015). A number of efforts to make high-quality preschool available to high-risk families—either through targeted programs such as Head Start or through universal prekindergarten programs—have shown positive effects on children's school readiness (Gormley, Gayer, Philips, & Dawson, 2005;

Phillips & Meloy, 2012; Winsler et al., 2008; Zhai, Brooks-Gunn, & Waldfogel, 2011). However, children's access to these resources may be limited by the fact that the number of children who could benefit from the programs far exceeds the number of available slots in such programs (Bassok, Finch, Lee, Reardon, & Waldfogel, 2016).

Children in highly mobile/homeless families and those who have been placed in foster care face additional barriers in accessing high-quality preschool programs. Because of their mobility, these children may not be able to get the full dosage of programs that typically run on an academic calendar year. Parents who were homeless reported that housing instability caused them to frequently interrupt their children's enrollment in preschool programs (Taylor, Gibson, & Hurd, 2015). In their study of preschool arrangements of children in foster care, Lipscomb and Pears (2011) found that children who were enrolled in Head Start had a history of *fewer* transitions than children enrolled in other types of early childhood programs.

The likelihood that early adversity will interfere with exposure to early learning resources and experiences has a number of implications for children transitioning to kindergarten. First, as noted above, the lack of exposure to educational resources in the home increases the likelihood that children will have deficits in their early literacy and numeracy skills (Anders et al., 2012; Britto & Brooks-Gunn, 2001). Second, the lack of exposure to early childhood education programming suggests that these children will be less familiar with the routines and expectations of a typical classroom. Third, because they are less likely to have had exposure to groups of peers in early childhood education settings, children who have experienced early adversity may also have less developed social skills than their peers who had access to preschools.

Impacts of Early Adversity on Caregivers

When children are experiencing early adversity, their parents are often facing the same circumstances. This can lead to difficulties in parenting skills, which in turn may affect the skills needed for a successful kindergarten transition. Parenting that is harsh (e.g., involving high levels of negativity) or inconsistent (e.g., difficulty following up on directions and providing consistent rules and structure) has been linked to lower levels of school readiness (Chazan-Cohen et al., 2009; Dodge, Greenberg, Malone, & The Conduct Problems Prevention Research Group, 2008; Morgan, Farkas, Hillemeier, & Maczuga, 2009; Pungello, Iruka, Dotterer, Mills-Koonce, & Reznick, 2009; Walker & MacPhee, 2011). Conversely, supportive parenting in which consistent rules and routines are provided appears to foster in children the early learning and social–emotional skills that are associated with better transitions to kindergarten (Baker, Cameron, Rimm-Kaufman, & Grissmer, 2012; Chazan-Cohen et al., 2009; NICHD Early Child Care Research Network, 2004).

Consistently, studies of parents in low SES families, those who are highly mobile or homeless, and those involved in family violence find that these parents exhibit

poorer parenting skills than their counterparts who are not experiencing such adversities (Bower-Russa, Knutson, & Winebarger, 2001; Bradley, Corwyn, McAdoo, & García Coll, 2001). However, studies also show that positive parenting can buffer the negative effects of adversity on children (Kiernan & Mensah, 2011; McNeil Smith, Holtrop, & Reynolds, 2015; Narayan, 2015). For example, children in homeless families were not adversely affected by high levels of parenting stress when their mothers used praise and incentives as discipline techniques (McNeil Smith et al., 2015), and they were more likely to be accepted by peers at school when their parents used responsive parenting techniques (Herbers, Cutuli, Supkoff, Narayan, & Masten, 2014).

Another component of parenting that is critical for the kindergarten transition is parental involvement in learning (Englund, Luckner, Whaley, & Egeland, 2004; Janus & Duku, 2007; Miedel & Reynolds, 1999). When parents show greater involvement in their children's learning and literacy activities during the preschool years, children demonstrate higher levels of school readiness skills, including literacy and social-emotional abilities (Chazan-Cohen et al., 2009; Englund et al., 2004; Miedel & Reynolds, 1999). This is consistent with evidence that once children enter school, parental involvement can be a positive predictor of better achievement and educational attainment (Barnard, 2004; Christenson, 1999; Zhang, Hsu, Kwok, Benz, & Bowman-Perrott, 2011).

Early adversity may interfere with parental involvement in early learning (Di Santo, Timmons, & Pelletier, 2015; Pears, Fisher, Bruce, Kim, & Yoerger, 2010; Zhang et al., 2011). For example, Pears, Fisher, et al. (2010) showed that children in foster care experienced lower levels of caregiver involvement in their early school experiences than did their peers who were not in foster care, and these lower levels of caregiver involvement predicted lower levels of social–emotional adjustment in early elementary school. Parents of children who have experienced early adversity may have particular difficulties becoming involved with their children's schooling if they did not have positive experiences in school themselves (Carlisle, Stanley, & Kemple, 2005). Research indicates that parents in low SES homes understand that involvement is important and want to be involved in school (Abrams & Gibbs, 2002; Myers, 2015; Yoder & Lopez, 2013). However, these parents often feel that their opinions and needs are not heard by school staff and that those staff look down on them or make incorrect assumptions based on their SES or ethnicity (Abrams & Gibbs, 2002; Hanafin & Lynch, 2002; Myers, 2015; Yoder & Lopez, 2013). This situation may be amplified for parents who have previously had their children placed into foster care (Colton et al., 1997).

Parental lack of involvement in schooling may have a number of negative effects, specifically on the transition to kindergarten for children who have experienced early adversity. On a practical level, parents may not be aware of kindergarten preregistrations and events such as opportunities to visit the school and meet the teachers prior to the beginning of the kindergarten year. Exposure to such events may make the transition to school easier and more successful for children (LoCasale-Crouch, Mashburn, Downer, & Pianta, 2008). If their parents are not aware of, or are hesitant to attend, such events, children with histories of early

adversity may arrive at school with less knowledge of the school environment, their classroom, and their teachers than their peers whose parents are more involved. Furthermore, without parent involvement at home, children may also struggle with learning the new routines that come with entry into school—such as completing and returning homework (Serpell, Sonnenschein, Baker, & Ganapathy, 2002). Finally, when parents have strong relationships with teachers, this may buffer children from some of the effects of early adversity on kindergarten performance (Iruka, Winn, Kingston, & Orthodoxou, 2011). Therefore, if parents are less involved in school and thus have weaker relationships with teachers, this may mean that children do not benefit from the potential buffering effects of a strong parent–teacher relationship.

Impacts of Early Adversity on Children's Neurobiological Functioning

For children, early adversity can have several detrimental effects on their neurobiological development that may influence a range of skills and behaviors critical for success in the school transition. Children's abilities to regulate their behaviors and emotions are essential to both learning and social adjustment in school (Blair & Diamond, 2008). Central to self-regulation are executive functions, which have been linked to the prefrontal cortex region in the brain (Casey, Tottenham, & Fossella, 2002). Children with histories of low SES, homelessness, maltreatment, and placement in foster care tend to have poorer executive functioning skills than their peers who have not experienced adversity on a variety of indices (Brown, Ackerman, & Moore, 2013; Hughes, Ensor, Wilson, & Graham, 2010; Lengua, Honorado, & Bush, 2006; Loman et al., 2013; McDermott, Westerlund, Zeanah, Nelson, & Fox, 2012; Pears, Bruce, Fisher, & Kim, 2010). In the classroom, low executive function skills are likely to translate into poor attention, impulsivity, poor organizational skills, and disruptive behaviors such as aggression and tantrumming (Blair & Diamond, 2008; Brophy, Taylor, & Hughes, 2002; Lynam et al., 2000; Valiente, Lemery-Chalfant, Swanson, & Reiser, 2008).

Poor executive functioning may be particularly detrimental during the transition to kindergarten, because this is a period during which children need to learn the rules and routines of their classrooms as well as establish relationships with new peers. Children who have difficulties focusing their attention and regulating the emotions and behaviors may not be able to attend to the new information that they are receiving about how to behave at school. Additionally, if children are feeling anxious about the transition and cannot regulate their emotions, their anxiety may be expressed in disruptive and aggressive ways (Nantel-Vivier, Pihl, Cote, & Tremblay, 2014). Such behavior can then earn the children a negative reputation with teachers and peers that may be difficult to change over time.

Another key neurobiological system that may be negatively impacted by childhood experiences of early adversity is the hypothalamic-pituitary-adrenal (HPA)

axis. The HPA axis helps the body to mount a response to environmental challenges through its production of cortisol (Hennessy & Levine, 1979; Johnson, Kamilaris, Chrousos, & Gold, 1992). Elevated cortisol levels facilitate such survival functions as mobilization of energy, modulation of immune systems, and inhibition of long-term restorative functions that would otherwise utilize energy (Sapolsky, Romero, & Munck, 2000). The HPA axis has two primary functions, and its functioning is often measured through determining an individual's level of cortisol at a given time-point. The first function of the HPA axis is to regulate the body's resources throughout the course of the day. Thus, there is a diurnal rhythm to cortisol release—it is higher in the morning, allowing an individual to be awake and alert to start the day. The level of cortisol in the body then gradually decreases throughout the course of the day until it reaches its lowest point at night when the individual should be resting (Sapolsky et al., 2000). The second function of the HPA axis is to help the body to mount a response to acute stressors by elevating cortisol levels to facilitate an array of survival functions such as mobilization of energy (Sapolsky et al., 2000). Moderate, but short-lived, activation of the HPA axis in the face of environmental challenges is adaptive, allowing an individual to respond to the immediate demands of the environment and adjust behavior to maintain optimal longer-term functioning (Blair & Peters, 2003; Boyce & Ellis, 2005).

Disruptions in HPA axis diurnal functioning and reactivity have been noted in children who have experienced early adversity. For example, maltreated children show blunted diurnal rhythms, such that their morning cortisol levels are lower than those of their non-maltreated peers (Bernard, Butzin-Dozier, Rittenhouse, & Dozier, 2010; Bruce, Fisher, Pears, & Levine, 2009). Similar blunted patterns have been found in children raised in low SES environments (Willner, Morris, McCoy, & Adam, 2014), although not always consistently (Hill-Soderlund et al., 2015). In terms of reactivity, children who have experienced early adversity often show lower cortisol reactivity to stressful situations than their peers who have not experienced adversity (Blair, Berry, Mills-Koonce, Granger, & The Family Life Project Investigators, 2013; Fisher, Kim, Bruce, & Pears, 2012). Especially pertinent for the discussion of the kindergarten transition, Graham and colleagues (Graham et al., 2011) demonstrated that children with a history of maltreatment and living in foster care showed less reactivity in their diurnal cortisol rhythm to that transition than their non-maltreated peers.

The transition to school represents a developmental challenge. Children must enter a new environment, learn new rules and routines, adjust to the signals and responses of a new group of peers, and be compliant with requests from unfamiliar adults. Such a moderate challenge has been shown to activate a child's HPA axis (Boyce et al., 1995). Failure to show a heightened HPA axis reactivity during the transition might signal that a child is not paying enough attention to the transition and consequently may not adjust as well to the new situation. Consistent with this hypothesis, a recent study by Graham and colleagues (Graham, Pears, Kim, Bruce, & Fisher, 2017) shows that the slope of the diurnal cortisol rhythm on children's first day of school predicted teacher ratings of adaptation and learning behavior in the fall of kindergarten. Specifically, children who had shown a higher cortisol slope

on the first day of school, potentially signaling that they were anticipating and thus more attentive on that critical day, were better adjusted by the middle of the fall than were children who showed a less steep slope. This suggests that children who have atypical HPA axis functioning due to early adversity may struggle with the transition to school.

Ameliorating the Effects of Early Adversity on the Kindergarten Transition

Although early adversity may negatively affect the transition to kindergarten through the pathways discussed above, these same avenues also indicate potential points of intervention by which to improve these children's transitions and overall kindergarten adjustment. In the next section, we present suggestions for interventions at each level in the model in Fig. 1. This is not intended to be an exhaustive review but rather an overview of the types of interventions that could be offered to prevent negative transitions, and thus poor educational outcomes, for children who have experienced early adversity. Furthermore, as early adversity is a complex phenomenon involving impacts at multiple levels of development, ameliorating the effects of such adversity is unlikely to be accomplished with a single program or intervention. Rather, intervention is expected to require multiple efforts at different timepoints of development, and groups of children with varying experiences may need different types of interventions. Thus, combinations of the interventions described below at the levels of the child, family, teacher, and school are likely to be necessary for the greatest and most sustainable impact.

Interventions Focused on Early Learning Environments

As is noted above, children who have experienced early adversity are less likely than their peers to have access to high-quality early childhood education opportunities (Larson et al., 2015). Efforts to provide universal access to prekindergarten programming, often provided by the K–12 educational system, have been increasing over the past 25 years (Barnett, 2007). In general, these efforts have been shown to benefit children who have experienced early adversities such as living in low-income circumstances (Christina & Goodman, 2005; Gormley et al., 2005). Thus, one way in which to ameliorate the effects of early adversity on the kindergarten transition is to continue to increase funding for and provision of prekindergarten programs for high-risk families.

However, as is also noted above, many children might not be able to receive the full dosage of prekindergarten programs due to high residential mobility. Thus, in addition to longer-term, high-dosage programs, it may also be beneficial to target

high-risk children who have experienced early adversity using shorter-term programs specifically focused on providing them with the skills necessary to make a successful transition to kindergarten. Additionally, timing such interventions to occur immediately prior to and/or during the period of the kindergarten transition may leverage children's and parents' focus on school, as well as capitalize on the changes that are naturally occurring during this period (Pianta, Rimm-Kaufman, & Cox, 1999). Examples of such programs are presented in the third section of this book, including the Kids in Transition to School (KITS) Program, an intervention that has been tested with students who have experienced such early adversities as maltreatment and placement in foster care and high poverty.

Additionally, as is noted above, there is a significant income gradient in the availability of home literacy materials. Efforts to remediate this gradient for children facing such early adversities as poverty have included the distribution of literacy materials and information about the importance of reading to children through libraries and other community-based agencies (e.g., Peifer & Perez, 2011). The results of the few studies that have rigorously investigated the effectiveness of such programs have been mixed (Neuman & Celano, 2006; Peifer & Perez, 2011; Vanobbergen, Daems, & Van Tilburg, 2009; Whaley, Jiang, Gomez, & Jenks, 2011). It appears that programs that provide parents with explicit instruction on how to read to children, as well as with materials that support the literacy activity, produce clearer and stronger improvements (Peifer & Perez, 2011; Vanobbergen et al., 2009; Whaley et al., 2011) than programs that simply provide materials alone (Neuman & Celano, 2006). Furthermore, having multiple agencies participate in communicating a consistent message and provision of materials across time seems to contribute to greater efficacy (Peifer & Perez, 2011; Whaley et al., 2011).

Interventions Focused on Caregivers

As is noted above, parents of children who have experienced early adversity are likely to show deficits both in parenting skills and involvement in early learning that may impede the smooth transition into kindergarten. There are a number of evidence-based parenting programs to teach effective parenting skills that could be utilized by both school districts and community agencies as part of transition activities (see Gewirtz & Youssef, 2017 for a review). When working with families experiencing early adversity, the potential barriers to participation discussed in relation to children's use of early education programs are also relevant to parents' use of parenting programs. Thus, programs to intervene with parenting skills will need to be adapted to these specific populations (Holtrop, Chaviano, Scott, & Smith, 2015). This has been successfully done with a number of interventions (Perlman, Cowan, Gewirtz, Haskett, & Stokes, 2012; Petra & Kohl, 2010; Self-Brown et al., 2015).

Whereas the creation of programs to teach parenting skills in general is likely to be a more systemic effort to promote a positive transition for children who have experienced early adversity, efforts to involve parents in school may be more local-

ized to schools and teachers. The transition practices employed by teachers have been shown to improve children's school readiness (LoCasale-Crouch et al., 2008), and such improvements can partially be explained by the positive effects of transition practices on parent involvement (Schulting, Malone, & Dodge, 2005). However, families who have experienced early adversity may be more difficult to engage in school in general and transition practices in particular (Schulting et al., 2005). Teacher expectations may add to this difficulty. For example, in one nationwide survey, 76% of teachers noted that they believed parents took an adversarial stance toward their children's schools (Markow & Martin, 2005). Other studies have shown that teachers report the least amount of contact and lowest levels of comfort with low-income families whose children are experiencing behavioral issues (Stormont, Herman, Reinke, David, & Goel, 2013).

The difficulties of engaging high-risk parents in the transition may be further complicated by a lack of training for teachers on how to engage families in school (Hoover-Dempsey, Walker, Jones, & Reed, 2002; Mahmood, 2013). Twenty-three percent of new teachers surveyed reported that they were not prepared to engage parents in their children's schooling (Markow & Martin, 2005). Thus, one way to begin to promote more positive parental involvement and kindergarten transitions for children who have experienced early adversity is to provide explicit training (both preservice and in-service) on methods by which to involve parents. Furthermore, such training should specifically focus on how to engage parents from high-risk backgrounds because, although some training may give teachers information about techniques to involve parents, it may not prepare teachers for problem-solving if the techniques do not work or only work with certain groups of families (Mahmood, 2013).

Additionally, trainings should also stress the importance of positive, interpersonal contact. The most common transition practice employed by teachers is to send newsletters to parents. This is also a common way that teachers communicate with parents once children are enrolled in school (Miretzky, 2004). However, this may seem impersonal and may not reach parents from high-risk backgrounds (either because children do not bring information home or because of parents' low reading levels). Direct contact with the parents either through parent–teacher meetings, phone calls, or home visits may promote more positive relationships (Miretzky, 2004).

However, it is also important that such contacts be positive, at least the majority of the time (Miretzky, 2004). If teachers only directly contact parents when the student is having difficulties, parents will come to see teacher contacts as negative and may try to avoid them. This may be particularly true for parents of children who have experienced early adversity as they have negative memories of school (Carlisle et al., 2005). One way in which teachers may work to create positive expectations around communications from school is to call or write parents notes when children do well. This can help teachers to establish positive relationships with parents early in schooling that may increase the likelihood that parents will become involved in school in other ways. It also gives the parents and teachers a positive foundation from which to work if the student does start to experience difficulties in school.

One of the most cited reasons that teachers do not engage in transition practices is perceived lack of support from school administrators. Teachers also commonly cite the lack of administration support as a reason for not trying to make direct contact with parents (Miretzky, 2004). Thus, it is likely that school cultures will need to shift in order to support teacher efforts to engage parents.

Interventions Focused on Children

As is noted above, one way in which to intervene directly with children in order to increase the likelihood of a smooth kindergarten transition is to provide them with prekindergarten programming focused on school readiness. Because children who have experienced early adversity may have deficits in their neuro-regulatory systems, as discussed in the previous section, the curricula of such programming should specifically focus on teaching children self-regulatory skills and allowing them to practice and further strengthen these skills (Blair & Diamond, 2008; Pears, Fisher, et al., 2010). School readiness programming that has included an explicit component addressing self-regulation has shown positive effects on high-risk children's behaviors (Bierman, Nix, Greenberg, Blair, & Domitrovich, 2008; Pears et al., 2013) and neurobiological functioning (Graham et al., 2017; McDermott et al., 2017). Although the need to include self-regulation skills in preschool curricula is becoming increasingly recognized, many programs have yet to make this a specific focus (Bierman et al., 2008).

At the level of the kindergarten classroom, there are a number of steps that teachers can take to help children whose regulatory skills have been negatively impacted by early adversity. Primary among these is establishing and familiarizing the children with consistent classroom rules and routines. Inconsistency appears to be particularly detrimental to self-regulatory skills, especially to inhibitory control—children's ability to inhibit one response in order to make another response (Lengua et al., 2006; Valiente, Lemery-Chalfant, & Reiser, 2007). Children who have experienced frequent residential mobility due to low income, homelessness, or placement in foster care are likely to have experienced a high degree of inconsistency. In general, children who are in classrooms with consistent, explicit routines appear to fare better in school during the early elementary school years (Bohn, Roehrig, & Pressley, 2004; Cameron, Connor, Morrison, & Jewkes, 2008). Thus, such routines are likely to be even more essential to children who have histories of early adversity. Introducing high-risk children to the routines of the classroom prior to the start of school can ease the transition and allow children to experience the new routines prior to the first day of school when there are likely to be multiple distractions competing for the children's attention. A preview of the classroom and its rules and routines may also help to ease the anxiety that children who have already experienced multiple transitions in their lives may be feeling.

Teachers working with children who have experienced early adversity might also employ "calm down," "time away," or "time out" spaces and techniques in order to

help children increase their abilities to regulate their negative emotions. When faced with situations in which their impulses or desires conflict with those of others—such as when a teacher gives an instruction that a child does not want to or cannot follow or when a peer disagrees with a child—most children are likely to feel negative emotions. Those with well-developed regulatory skills will be able to inhibit negative feelings in order to follow directions or engage in problem-solving. However, children who have experienced early adversity and thus have deficits in their regulatory abilities may become overwhelmed by these emotions and subsequently engage in oppositional, disruptive, and/or aggressive behaviors (Kim & Cicchetti, 2010; Langevin, Hebert, & Cossette, 2015). These children benefit when the escalation from negative feelings to negative behaviors can be interrupted. This may be accomplished by allowing the child to leave the situation and go to a quiet place in which he or she can calm down before continuing the discussion. Such a place can be within the classroom and can be as simple as a comfortable chair or as elaborate as a small play tent. Some areas may also include pictures of things that the child can do to help calm him-/herself. Such a space allows the child the extra time needed to regulate emotions and behaviors so that active, positive problem-solving can take place (Australian Childhood Foundation, 2010). The teacher can also help the child utilize other calming behaviors, such as regulating breathing or using calm imagery (Klein, 2008). All of these techniques allow both the teacher and student to avoid becoming involved in a cycle of escalation in which the child becomes increasingly disruptive while the teacher becomes increasingly punitive, resulting in negative outcomes for all (Lapointe & Legault, 2004). If these techniques can be put into place before the transition to school and the child told about the purpose of them, this can increase the likelihood of a positive transition and reduce the need for the techniques in the longer run.

Central to the efficacy of all of these techniques are the attributions that teachers, and other school personnel, make about these students (Lapointe & Legault, 2004). If these students' reactive and unregulated behaviors are seen as a result of willful attempts to be oppositional, teachers are likely to react with negative sanctions. The teachers are also likely to have less positive relationships with these students, which can further negatively impact the student's achievement and school adjustment over time (Silver, Measelle, Armstrong, & Essex, 2005). If teachers and others view the behaviors of children who have experienced early adversity as a result of deficits arising from their negative experiences (or lack of positive experiences), then teachers are more likely to engage in proactive, solution-oriented approaches to problematic behaviors. Through developing an understanding of the multiple ways in which adversity can impact children's skills and behaviors, teachers and other school personnel may be better able to make attributions that will increase the likelihood that children will make positive transitions and experience better school adjustment over time.

Conclusions

This chapter has outlined how the experience of a number of types of early adversity—including low SES, high mobility and/or homelessness, and maltreatment—can negatively impact children's transitions to school. Early adversity affects children at a number of levels, including limiting their opportunities for early learning experiences, decreasing the involvement of their parents in early learning and then formal schooling, and producing deficits in a number of neuroregulatory systems that are central to school readiness and adjustment. Although the effects of early adversity are wide ranging, a number of studies have shown that it is possible to positively influence children's trajectories toward better outcomes, particularly through helping children to have a positive transition to formal schooling (Ramey & Ramey, 2004; Reynolds et al., 2010). In the latter portion of the chapter, we examined a number of potential points of intervention to increase these children's opportunities for a positive transition. The most effective interventions, or combinations of interventions, are likely to be those that address deficits at multiple levels—including the environment, family, and child's individual skills—and that are tailored to the specific needs of children who have experienced early adversity—including the needs for increasing regulatory skills and adapting programming for high levels of mobility.

Overall, in order to positively influence these children's trajectories, researchers, practitioners, and educators must continue to work toward understanding the mechanisms through which early adversity impacts children's transitions to school and their adjustment in school. Through such knowledge, the most potentially efficacious points and methods of intervention can be identified. Such efforts can then enhance educators' potential to reverse the negative effects of early adversity and help to create more positive outcomes for these vulnerable children.

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The Transition into Kindergarten for English Language Learners

Arya Ansari and Robert Crosnoe

Abstract The transition into kindergarten often serves as the basis for long-term disparities in educational attainment because initially small differences in early learning widen throughout the K-12 educational system. Given the long-standing disparities in their academic achievement related to being of low socioeconomic status and a racial/ethnic minority, the large and growing population of English language learners constitutes an important population in which to study the transition into formal schooling. The purpose of this book chapter is to describe the vulnerabilities faced by English language learners during this transitional period and the implications of this transition for their short- and long-term educational success. Throughout this chapter, we highlight how this transition into kindergarten may be amenable to policy intervention, its role in inequality, and how researchers, policy-makers, and practitioners can capitalize on the many strengths of these children and their families to facilitate a successful transition to school.

Although many children make a seamless transition into kindergarten, it is a period of vulnerability for many, who must learn to navigate a new institutional system, form and maintain new relationships with adults and peers, and develop new academic skills (Rimm-Kaufman & Pianta, 2000). This vulnerability is heightened when children have not had significant exposure to early childhood education prior to entering the K-12 system, their families' disadvantaged socioeconomic circumstances disrupt their opportunities to learn in and out of the home, and their parents lack familiarity with and status in the US educational system. In such situations, a smooth transition into kindergarten becomes less likely, which is notable given that even initially small differences in early learning at the start of formal schooling tend

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to widen across the educational career. The transition into kindergarten, therefore, is a fundamental component to long-term disparities in educational attainment (Alexander, Entwisle, & Olson, 2014).

This chapter focuses on English language learners as one segment of the increasingly diverse US population that may be vulnerable during the transition into kindergarten. Certainly, disparities between English language learners—large numbers of whom come from immigrant backgrounds—and their fellow students in academic achievement and educational attainment are well-documented, but the connection between those population-level disparities and the transition into kindergarten needs to be better understood (Crosnoe, 2005; Reardon & Galindo, 2009; The National Academies of Sciences, Engineering, and Medicine, 2017). After all, English language learners are less likely to attend early childhood education programs than other US children in the years prior to kindergarten, their families have high levels of socioeconomic disadvantage, and their parents often have trouble communicating with English-speaking parallels and may have little experience with the US educational system (Crosnoe, 2013). Consequently, what might be a challenging academic period for children in general may be particularly challenging for them, especially in the absence of sufficient supports and services (Crosnoe, Bonazzo, & Wu, 2015; Reardon & Galindo, 2009).

What can be done to reduce or counteract this potential vulnerability among English language learners to break the cycle of cumulative disadvantage before it gains strength? To address this question, this chapter delves into the kindergarten experiences of English language learners in the US during a time of demographic change, the relations between their families and schools, the implications of these kindergarten experiences and family-school relations for their educational success, and the policy and intervention efforts to serve English language learners and their parents in order to shed light on possible answers to this question.

The Transition into Kindergarten

According to life course theory, a transition is a change in status, stage, or setting that can result in a potential change (or disruption) in children's experiences and developmental trajectories (George, 1993). More specifically, transitions represent critical points of change in long-term development or experiential pathways, either as a time of opportunity for people to change course in positive ways or a time of vulnerability when people may be forced off course or fall behind in negative ways (Graber & Brooks-Gunn, 1996). The start of kindergarten has been viewed as a transition point with potential to create problems for children, especially certain groups of children already facing academic risks. Indeed, theoretical perspectives, like contextual systems (Pianta & Walsh, 1996), have been formulated to explain this phenomenon. This specific transition—one of many that children will make in their educational careers—represents both a physical change, in that many children move to a new school setting, and a social psychological change, in that children are

exposed to new sets of norms and challenges in kindergarten (Crosnoe & Benner, 2015). Like any transition, a school transition—including the transition to kindergarten—is both fluid and dynamic, with children's prior experiences shaping how the transition unfolds, which, in turn, shapes children's future home and school experiences.

This transition to school has also been found to magnify the existing disparities in children's early skills and behaviors. That is, children from different backgrounds enter school with wide-ranging differences in personal (e.g., English proficiency), experiential (e.g., preschool enrollment), and social psychological factors (e.g., parent-child relationships) that translate into small differences in early learning upon kindergarten entry (Entwisle & Alexander, 1988). These initially small differences in children's early learning and development then affect teacher and peer expectations, class assignments, and children's own self-evaluations and interactions with their families in ways that then shape future progress and performance. In other words, the early demonstration of skills (or lack thereof) affects educational investments in and treatment of children in an incremental way that eventually accumulates into divergent trajectories through elementary and secondary school—what starts out small is much bigger by the end (Entwisle, Alexander, & Olson, 2005; Reardon, 2011). This role of the transition into kindergarten in long-term educational outcomes is precisely why the focus of human capital intervention is increasingly turning to the years before and after this transition point.

Two additional theories help to explain why the transition into school is so important and how to invest in children—including English language learners—early on to reduce the effects this transition has in the long-term disparities in educational attainment. First, the family investment model posits that families with greater socioeconomic resources can invest more in their children. As an illustrative example of this theoretical framework, there has been a growing consensus within the social sciences that families with more money can spend some of those extra resources on higher-quality child care, books, and other educational activities (Crosnoe, Ansari, Purtell, & Wu, 2016; Yeung Linver, & Brooks-Gunn, 2002), each of which have ramifications for children's early learning and development (Duncan, Morris, & Rodrigues, 2011). At the same time, however, we also know that the parents of English language learners are more likely to be living in poverty as compared with the parents of monolinguals and, thus, are less likely to experience each of these activities (Crosnoe, 2013).

Second, family stress theory argues that the stress of financial hardships can result in less effective parenting (Conger, Ge, Elder, Lorenz, & Simons, 1994). Indeed, the stress of raising a family with few socioeconomic resources has been found to bring about feelings of depression and increasing family dysfunction, including in parents' relationships with their children, which, in turn, has short- and long-term implications for children's educational careers (Gershoff, Aber, Raver, & Lennon, 2007; Yeung et al., 2002). Again, because the parents of English language learners are more likely to be living in poverty as compared with the parents of monolinguals, and because most are ethnic minorities who likely face the stress of

ethnic discrimination and segregation, they are more likely to experience higher levels of emotional distress and dysfunction (Flores et al., 2008; Raver, Gershoff, & Aber, 2007). When taken together, these developmental and educational theories regarding the transmission of inequality point to the importance of the school transition and underscore the accumulating nature of inequality, which, if not addressed early on, is likely to persist throughout the life course.

Who Are English Language Learners?

Although there is no single definition of English language learners, a common usage is that they are children whose native language is not English but who are learning English as a second language (also referred to as linguistic minorities, non-native speakers, emergent bilinguals, and dual language learners). These children represent an important and growing segment of the US population. According to the Department of Education (2016), English language learners represent the fastest-growing segment of the student body of the US educational system. In the 2013–2014 school year alone, for example, over 4.5 million children in the K-12 system, or 1 out of every 10 students, were classified as learning English as a second language. As a point of comparison, between 1997–1998 and 2007–2008, the population of English language learners grew by approximately 53%, which far surpasses the 8% growth rate of the general student population in the USA (Batalova & McHugh, 2010). In fact, many expect continued growth of this population in the decades to come, such that, by 2030, English language learners will account for roughly 40% of students in the US educational system (Thomas & Collier, 2002). This demographic transition has had (and will continue to have) far-reaching implications for domestic policy and practice, and it has resulted in increased interest in the school experiences of this population of children.

Of course, this large and growing population is internally diverse—linguistically, culturally, and socially. English language learners demonstrate varying degrees of English language proficiency and speak more than 400 different languages at home (Ruiz-Soto, Hooker, & Batalova, 2015). Some of the most widely spoken foreign languages in the USA include Spanish, followed by Chinese, Vietnamese, French, and Arabic (Ruiz-Soto et al., 2015). Relatedly, estimates from the Early Childhood Longitudinal Study Kindergarten Cohort of 2010–2011 (ECLS-K: 2011; Tourangeau et al., 2014), a national sample of US children who entered kindergarten in the fall of 2010, reveal that roughly half of Hispanic (48%) and Asian-American (54%) children entering kindergarten come from a non-English-speaking home. Notwithstanding the diversity among English language learners, Spanish remains the most dominant foreign language spoken in the US, with seven out of every ten English language learners coming from a household that speaks Spanish (Ruiz-Soto et al., 2015).

There is also an extensive body of literature documenting that English language learners experience both a disproportionate amount of socioeconomic disadvan-

tages as compared with the general population and a cultural and linguistic mismatch between their home and school systems, which, together, result in a more difficult transition to kindergarten (Capps Fix, Murray, Ost, Passel, & Herwantoro, 2005). To begin, both English language learners and their parents often lack proficiency in the English language, which places them at academic risk during the transition to school. For children, this lack of English proficiency means that they enter kindergarten with lower English language skills as compared with their monolingual English-speaking classmates, a gap that persists well into their educational careers (Halle, Hair, Wandner, McNamara, & Chien, 2012). It is these very disparities that have spurred debates regarding the education of English language learners with a growing focus on whether dual language learning should be supported during the transition to school, even though there is evidence to suggest that learning English at the expense of children's first language may result in fewer benefits for children in the long-term (The National Academies of Sciences, Engineering, and Medicine, 2017). At the same time, however, it is important to acknowledge that the parents of English language learners are often immigrants, which means that they have less knowledge about the inner workings of the US educational system than many other parents—even those of the same socioeconomic status—and are less familiar with the written and unwritten rules of what is expected of them as their children's first and most enduring teachers (Crosnoe et al., 2016; Suarez-Orozco & Suarez-Orozco, 2001).

Beyond these sociolinguistic and cultural differences, children who are learning English as a second language are also more likely than other children to come from low-income families and communities. As a result, their parents are less likely to have a postsecondary education, which is important because mothers' educational histories shape children's early experiences and are predictive of school performance and economic mobility (Davis-Kean, 2005). Moreover, their parents, on average, are engaged in less cognitively enriched parenting, such as shared book readings and school involvement (Crosnoe et al., 2016). They themselves are also less likely to attend preschool or some other form of early childhood education during the years before kindergarten, which is notable given the promising potential these programs have in narrowing the existing disparities in children's early academic achievement (Capps et al., 2005; Crosnoe, 2007).

To be sure, the story of English language learners is not solely about risk and disadvantage. They, their parents, and their communities have some key strengths. For example, English language learners tend to exhibit stronger socioemotional and behavioral skills than their peers, and these children enter school with more emotional maturity in their classroom behaviors as compared with their monolingual classmates (Crosnoe, 2006; De Feyter & Winsler, 2009). Given a large number of English language learners are also the children of immigrants, these socioemotional strengths could reflect the types of families who decide to come to the US in the first place. They could also point to something about the immigration experience itself that results in children with a stronger social-behavioral skillset, such as overcoming challenges and building strong social networks (De Feyter & Winsler, 2009). An equally plausible explanation is that the parents of English language learners have

different values and place emphasis on different skills and behaviors as compared with the parents of monolingual children (Fuller & Garcia-Coll, 2010). Either way, these strengths are notable because teachers often consider children's social-behavioral skills to be one of the greatest assets during the early school years (Arnold, McWilliams, & Arnold, 1998). For example, children who hit, push, or are verbally aggressive toward other children make it harder for teachers to be emotionally supportive in the classroom and, instead, require that teachers spend more time in behavioral management, especially in classrooms with a high concentration of problem behaviors (Arnold et al., 1998; Yudron, Jones, & Raver, 2014). Unfortunately, however, given the rise in accountability standards in the educational system with regard to children's academic achievement, including in kindergarten (Bassok, Latham, & Rorem, 2016), these social-behavioral strengths that English language learners demonstrate are often not recognized enough during the transition to school.

As for the parents of English language learners, they tend to be quite emotionally invested in their children's future success and highly motivated to help them succeed. Despite these strong emotional ties, the socialization goals and parenting practices of these parents are quite different from those of monolingual White parents, which is largely attributed to the differences in cultural heritage (Fuller & Garcia-Coll, 2010). For example, Latino parents often try to foster good manners and respect for adults in their children, resulting in the aforementioned social-behavioral strengths during the transition to school, whereas monolingual families are often more academically focused. Even as the parents of English language learners adapt to a new culture in the US, they face countless obstacles to being involved in their children's education in the ways that are rewarded by the school system. Moreover, even when these families try to get involved in their children's education, school personnel are less likely to engage with them and often distance themselves, blaming parents for their children's struggles (Adair, 2014). In fact, the parents of English language learners have been found to derive fewer benefits from their participation in their children's schools (Adair & Tobin, 2007; Crosnoe et al., 2015) potentially because these partnerships are often unidirectional and shallow (e.g., teachers giving instructions to parents without fully incorporating their views or capitalizing on their motivations and support; Crosnoe & Ansari, 2015). That is, although the parents of English language learners often view themselves as integral to their children's education, due to obstacles and cultural mismatches, teachers often view these parents in a more passive light. These mismatches stem from the fact that few early childhood teachers are fluent in more than one language and even fewer are certified in bilingual education (National Academies of Sciences, 2017). Ultimately, even when the parents of English language learners are (or want to be) involved in their children's education, their involvement takes on different forms than the parents of monolingual children, and, therefore, they did not reap the maximum benefit from that involvement (for their children or themselves).

Nonetheless, when taken as a whole, there is clear converging evidence to suggest that English language learners often do not have access to the early experiences that result in a more successful transition to kindergarten, which is critical because

what happens during this period sets the stage for children's long-term educational success (Ansari et al., 2017; Halle et al., 2012; Reardon & Galindo, 2009). Moreover, the strengths and positive experiences that these children and their families do demonstrate are often not viewed as strengths by the American educational system and, thus, are often written off by school personnel.

English Language Learners' Transitions to Kindergarten: An Example from National Data

Given evidence of the role of the entry-level skills in long-term educational trajectories and disparities, any differences in children's early learning as a function of their home language are noteworthy and require closer inspection. To help illustrate these disparities, we use data from the aforementioned ECLS-K Class of 2010–2011, which contains roughly 2180 English language learners in its nationally representative sample, of whom 74% are Latino/a, 16% are Asian origin, 6% are White, and 4% are Black. Although the ECLS-K does not have the depth of many community-based studies of English language learners (e.g., Chang et al., 2007; Farver Lonigan, & Eppe, 2009; White & Greenfield, 2017), it provides a broad population perspective useful for giving a general picture of the experiences of this group of children and for identifying patterns that need to be unpacked.

From our analyses, we present both unadjusted and adjusted differences in the early learning and development of approximately 14,050 kindergartners in the sample. One set of models illustrates the raw differences in English language learners' and non-English language learners' academic and social-behavioral skills at kindergarten entry in 2010; that is, we do *not* control for other indicators of families' socioeconomic status (i.e., unadjusted models). In doing so, we illustrate how well English language learners are doing as compared with their monolingual peers right after the transition to kindergarten. The second set of models adjust for mothers' educational histories as a means of demonstrating how much of these differences in kindergarten performance in these key domains can be accounted for by other indicators of socioeconomic status (i.e., adjusted models).

When looking at the unadjusted descriptive statistics, a number of important patterns emerge. To begin, English language learners enter school scoring approximately 45–55% of a standard deviation lower than their monolingual English-speaking classmates on assessments of math and reading (see Fig. 1). Practically speaking, these unadjusted disparities in children's academic achievement amount to roughly 11 months of development (calculated by dividing the standardized difference in academic test scores by the regression slope for children's age at assessment; see Bradbury, Corak, Waldfogel, & Washbrook, 2011). That is, at the age of 5, English language learners enter school roughly 1 year behind their monolingual classmates in areas of early math and reading. While there are no differences in children's approaches to learning, English language learners do exhibit some social-behavioral strengths. Specifically, children who are learning English as

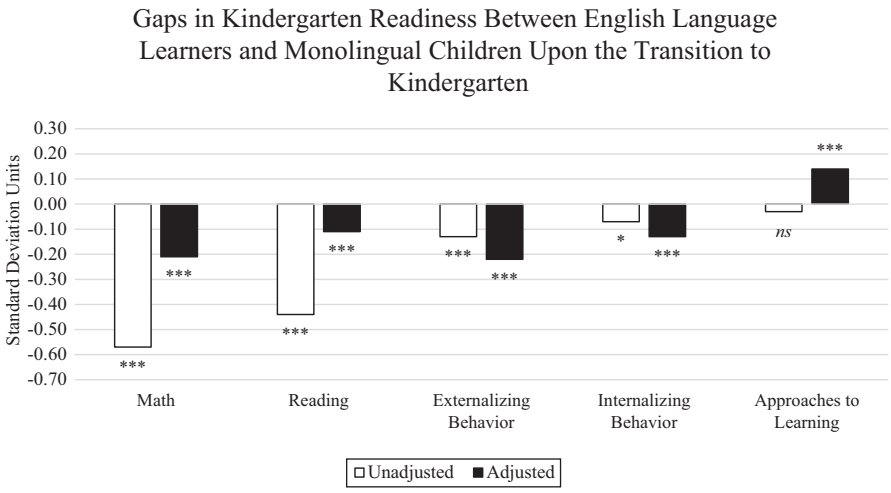

Fig. 1 Early learning disparities between English language learners and monolingual children during the transition to kindergarten. Notes: Smaller numbers for externalizing and internalizing behavior indicate more optimal behavior. Unadjusted models only account for children's home language status. Adjusted models include mothers' educational attainment (Data source: Early Childhood Longitudinal Study Kindergarten Cohort of 2010–2011). ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; *ns* not significant

a second language enter kindergarten demonstrating lower levels of internalizing and externalizing problems as compared with their monolingual peers, with differences corresponding to 10–15% of a standard deviation (see Fig. 1).

We next incorporated mothers' total years of educational attainment to assess the degree to which these disparities in children's early learning related to English language learner status stem from other socioeconomic factors, especially socioeconomic disadvantages, correlated with this status. We find that each additional year of mothers' educational attainment results in a 13–14% of a standard deviation improvement in children's academic achievement in kindergarten. It also results in a 2–6% of a standard deviation improvement in their social-behavioral skills, as measured by teacher reports at kindergarten entry. When comparing the effect sizes between the unadjusted and adjusted models, we find that roughly three quarters of the initially observed differences between English language learners and non-English language learner's academic achievement were accounted for by their mothers' lower levels of educational attainment (see Fig. 1). Similarly, after accounting for mothers' educational histories, we find that English language learners demonstrate even stronger social-behavioral skills (effect sizes = 13–22% of a standard deviation) as compared with their monolingual speaking classmates, including approaches to learning (effect size =14% of a standard deviation).

When taken together, these descriptive estimates from the ECLS-K paint a national portrait of English language learners and their special needs during the transition into formal schooling. To recap, these national estimates indicate that English language learners enter kindergarten up to a year behind their monolingual English-speaking classmates in areas of early mathematics and literacy, which is

largely—but not entirely—attributed to their mother's lower levels of educational attainment, an important proxy for socioeconomic status as well as the home environment more generally. At the same time, however, English language learners do exhibit socioemotional and behavioral strengths, which are partially masked by their mothers' lower levels of educational attainment. Thus, these descriptive estimates highlight the strengths and weaknesses of English language learners during the transition to kindergarten, which the school transition and contextual systems models contend will have long-term ramifications for their educational careers. The question, then, is how we can counteract the potential vulnerabilities among these children before they enter kindergarten.

Examples of Transition Intervention Programs

If these small but significant gaps in children's early learning and development related to English language learner status are the basis for long-term inequality, then closing these achievement gaps would serve as a meaningful way of reducing inequality before it is too late. This very argument underlies the increased investments in the early childhood years (Duncan & Magnuson, 2013; Yoshikawa et al., 2013), which are supported by the fact that the greatest long-term benefits of intervention programs are derived from policies that target children and their families prior to formal schooling (Campbell, Ramey, Pungello, Sparling, & Miller-Johnson, 2002; Reynolds, Temple, White, Ou, & Robertson, 2011; Schweinhart et al., 2005). The family investment model and family stress theory, which are discussed above, also point to two potentially successful strategies that are at the center of many government policies and programs that have been developed to address achievement gaps before the transition to school. The strategies differ in their generational focus, with one strategy focusing on developing the skills of children themselves and the other strategy focusing on developing the skills of children's mothers as an indirect way of helping children.

Early Childhood Education

The first strategy is investing in preschool education for 3- and 4-year-olds across the country (Duncan & Magnuson, 2013). Although over half of children in the USA experience some sort of formal preschool program during the 2 years prior to school entry, roughly 47% of 3- and 4-year-olds do not attend preschool before entering kindergarten (Child Trends, 2016). For these children who do not experience preschool, one can imagine that their adjustment to the new demands and routines of kindergarten may be more challenging. Beyond experiences in a formal education setting that might facilitate a more seamless transition to school, the academic benefits of preschool are also well-documented, including for children of Latino origin and those learning English as a second language (Ansari & Winsler, 2016;

Bloom & Weiland, 2015; Crosnoe, 2007; Weiland & Yoshikawa, 2013). In fact, this group of children is *more* likely to benefit from participating in preschool than their monolingual classmates (Gormley, Gayer, Phillips, & Dawson, 2005; Loeb, Bridges, Bassok, Fuller, & Rumberger, 2007), suggesting that preschool programs can reduce the aforementioned disparities in children's academic achievement during the transition to formal schooling.

The most successful preschool programs are often characterized by emotionally supportive teacher-child interactions, skillful behavior management, and classroom activities that promote children's engagement, all of which have been found to be particularly important in facilitating children's early academic and social-behavioral readiness for kindergarten (Johnson, Markowitz, Hill, & Phillips, 2016; Mashburn et al., 2008). Such programs are also characterized by smaller class sizes as well as strong educational qualifications and training among teachers. Finally, some of the most effective preschool programs also acknowledge and embrace children's diversity and culture, which is imperative for the school success of young English language learners (Garcia & Jensen, 2007, 2009; The National Academies of Sciences, Engineering, and Medicine, 2017).

Although these types of high-quality preschool programs have had great success in facilitating children's school readiness for kindergarten, their long-term academic effects for both English language learners and monolingual children tend to diminish as they progress through the K-12 educational pipeline (Hill, Gormley, & Adelstein, 2015; Lipsey, Farran, & Hofer, 2015; Puma et al., 2012). One reason for these diminished benefits is that investments in children's education prior to school entry are undermined because they are not coupled with continued investments in children after the transition to formal schooling (Brooks-Gunn, 2003; Currie & Thomas, 2000). An emerging body of evidence does suggest, however, that early childhood programs that implement sustainability practices (e.g., have preschoolers visit kindergarten class) ease children's transition into formal schooling and, therefore, can sustain a larger share of the benefits derived from early childhood programs (Benner, Thornton, & Crosnoe, 2017). At the same time, however, it is important to acknowledge that English language learners are less likely to experience such practices during the school transition than their monolingual White peers (Benner et al., 2017), which, in turn, results in a less successful school transition.

Nonetheless, illustrating the promise of preschool, evaluations of early childhood programs in Florida and North Carolina have found that these programs do facilitate children's school preparedness, which, in turn, results in greater school success for all children 4–6 years down the road, including among children learning English as a second language (Ansari et al., 2017; Dodge, Bai, Ladd, & Muschkin, 2017). Specifically, these evaluations from these two communities show that preschool attendees are more likely to pass standardized tests of math and reading, earn a higher grade point average, are less likely to be placed in special education, and are less likely to be retained, with effect sizes ranging from 10% to 20% of a standard deviation.

Two-Generation Programs

Even though preschool programs hold great promise in facilitating English language leaners' early school success, these children are, on average, less likely to be enrolled in a high-quality preschool program as compared with their monolingual English-speaking peers (Crosnoe, 2013). Moreover, although early childhood programs can reduce existing disparities in children's early learning, parents remain the most important shepherds of their children's school success (Belsky et al., 2007). That is, one of the most important factors in determining whether children experience a more seamless school transition is the extent to which parents actively participate in their children's education prior to (and during) the transition to kindergarten (Raver et al., 2007). Specific activities such as reading to children daily, playing with numbers and letters, and parents' school involvement have each been linked with improved prospects of school success (Ansari & Gershoff, 2016; Cooper, Crosnoe, Suizzo, & Pituch, 2009).

Despite the potential benefits of parents' investments in their children's education, we also know that the parents of English language learners are less likely to support their children's school readiness in these ways, which are oftentimes rewarded by schools, both before (Crosnoe & Ansari, 2015) and after the transition to school (Crosnoe et al., 2016). Thus, early childhood initiatives and intervention programs can only go so far without making changes to the family system. While some of these disparities in parenting are accounted for by corresponding disparities in socioeconomic status and stem from structural barriers and lack of access to educational and economic opportunities (Crosnoe et al., 2016), one persisting question is how we can reduce them. Below, we discuss a second strategy that has received renewed policy interest, namely, two-generation approaches, which focus on providing services for both parents and their children (Chase-Lansdale & Brooks-Gunn, 2014).

Two-generation approaches can take one of two forms, but both methods have one thing in common: both strategies attempt to improve the quality of children's lives at home. Indeed, providing children and families with education, economic supports, and social capital are three key elements of two-generation programs that aspire to break the intergenerational transmission of inequality (Aspen Institute, 2014). The first two-generation strategy has been to *indirectly* target parent's involvement in their children's education by addressing the factors (e.g., lack of education, language barriers) that constrain it. As one example, there has been increased interest in providing more financial stability to families and providing mothers with the opportunity to go back to school to pursue secondary education (Harding, 2015; Magnuson, 2007). These efforts are largely due to the fact that improvements in families' socioeconomic status, especially during the early childhood years, have been found to have downstream effects on children's school success, in part because these investments help parents construct a more educationally

supportive home environment (Gershoff et al., 2007; Raver et al., 2007; Yeung et al., 2002). These potential benefits of improving parents' human capital hold true for the parents of English language learners as well (Crosnoe & Kalil, 2010). Such strategies are particularly relevant for this population, however, because a large share of English language learners live in homes with incomes below the federal poverty line and over 40% have mothers with less than a high school education (Tourangeau et al., 2014).

In one such program, CareerAdvance, trained staff in Head Start and Early Head Start programs provide free coaching and career training for parents with the goal of helping parents to qualify for employment within the health-care sector and to attain a degree in Registered Nursing or Health Information Technology. Efforts to raise the human capital of parents have also been attempted by many public assistance programs in many locales, such as the Advancement Plus Program in Colorado, funded by the Temporary Aid for Needy Families program. Similar two-generation strategies have also been incorporated into child interventions, including programs like AVANCE. With sites across the country, the AVANCE program attempts to strengthen families in at-risk communities through parent education and support programs, with evidence suggesting that the program does in fact increase parents' knowledge and skills and parenting practices at home (Johnson, Walker, & Rodriquez, 1991).

The second two-generation strategy is to *directly* target parents' parenting behaviors and knowledge on either side of the transition into school. These services are often coordinated with existing early childhood services, such as Early Head Start and Head Start, or operate out of schools or community centers. While the primary goal of these programs varies, they generally attempt to make the home environment more supportive of children's learning and development. Some programs also try to bridge connections between the home and school systems and between communities and families. Despite the differences in the goals of programs, these two-generation services often have a set curriculum and require that parents attend a series of educational sessions that aim to promote positive parenting and healthy child development.

Although changing parents' behaviors is difficult, especially within a short period of time, there is promising evidence to suggest that this strategy can be effective. As one example, Head Start, which is the nation's largest federally funded preschool program serving roughly one million children per year and, perhaps, the most well-known two-generation program in the US, has been found to improve parents' home involvement and reduce use of punitive forms of discipline (Puma et al., 2010). The Head Start program has achieved these goals through a variety of formal activities such as having parents volunteer in the classroom, attend parenting workshops, and engage in regular parent-teacher conferences (Ansari & Gershoff, 2016). Relatedly, long-term evaluations of the Chicago Child-Parent Centers Program, which coupled educational services for children during the transition to school with opportunities for parents to make social con-

nections, attend workshops, and attend parenting and GED courses, have yielded consistent positive outcomes for participants through their late 20s. For example, the program participants not only entered school more ready to learn, but they were also more likely to complete high school and were less likely to be involved in the criminal justice system (Reynolds et al., 2011). Other smaller and more contemporary two-generation programs that are specifically targeted at English language learners, such as Abriendo Puertas and the Parent Engagement Education Program, have also received growing recognition for their promise in making a difference in the lives of children and their families. For example, Abriendo Puertas, a 10-session program that focuses on teaching parents how to engage in their children's education (both in and out of the home), has served over 30,000 families in over 30 states around the country and has proven to be successful at improving parents' engagement in educational activities with their children (Moore, Caal, Rojas, & Lawner, 2014).

There have also been programs that have been designed to target both parents and teachers, with the goal of changing school personnel attitudes toward the families of English language learners. For example, programs such as Lee y Serás offer workshops for parents and teachers as a means of breaking through the cultural mismatches that often exist across the home and school systems and familiarizing parents with teachers and teachers with parents. In fact, results from a program evaluation of Lee y Serás found that not only did parents improve in their knowledge, efficacy, and home literacy activities, but just as importantly, teachers who participated in the workshops were more likely to supplement their English instructional practices with Spanish activities (e.g., including bilingual material; reading bilingual stories; Goldenberg & Light, 2009). Put another way, teachers and providers who participated in the Lee y Serás workshops were better able to integrate English language learners home language and culture into their program activities, which some scholars argue has downstream benefits for the school preparedness of English language learners (Garcia & Jensen 2007, 2009). Thus, programs that train both parents and teachers might prove to be even more successful at fostering the type of environment necessary to support the early school success of English language learners and allow for families and schools to better understand each other.

In sum, there have been increased investments in intervention programs in the years right before and right after the transition to kindergarten, which has largely resulted from the growing recognition of the long-term ramifications of early disparities in children's academic and social-behavioral development (Heckman, 2006). Indeed, there are a variety of transition programs, including high-quality preschool education and two-generation strategies, that we have discussed here that have been implemented to reduce the achievement gaps that result from English language learner status and facilitate a more seamless transition to kindergarten.

The Home and School Experiences of English Language Learners: An Example from National Data

Considering that different dimensions of parenting discussed above and preschool enrollment have implications for children's short- and long-term educational trajectories, any differences in these factors across English language learners and their monolingual peers also require greater scrutiny. To help illustrate these disparities, we again use data from the ECLS-K Class of 2010–2011. Similar to our prior set of analyses, we present both unadjusted and adjusted differences in the parenting and preschool enrollment of roughly 14,050 kindergartners. The outcome measures of interest were all based on parent report and included information on parents' involvement in their children's schools (e.g., attended an open house or back-to-school night), parent's engagement in cognitive stimulation (i.e., the frequency with which parents read to children), children's participation in organized activities (e.g., dancing lessons and organized clubs and/or recreational programs), children's enrollment in preschool (i.e., a school-based or center-based program), and household resources (i.e., the number of books in the household).

Beginning with preschool enrollment, national estimates from the ECLS-K Class of 2010–2011 reveal that roughly 60% of monolingual children attend preschool at the age of 4, which is significantly greater than the enrollment rate of English language learners, which lagged behind at 45% (see Fig. 2). Thus, similar to other recent national estimates (e.g., Child Trends, 2016), these data suggest that the majority of English language learners were cared for by either their parents or another informal childcare provider (e.g., relative or non-relative). Even though significant disparities persisted in our adjusted models after we accounted for their

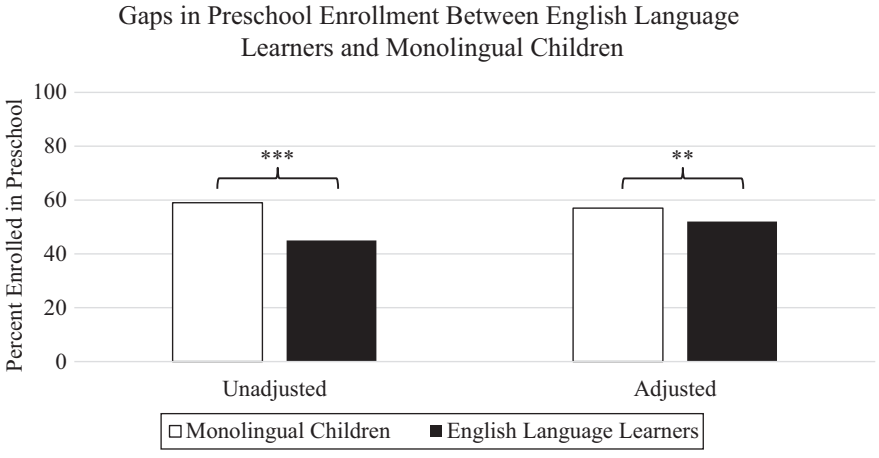

Fig. 2 Disparities in preschool enrollment between English language learners and monolingual children. Notes: Unadjusted models only account for children's home language status. Adjusted models include mothers' educational attainment (Data source: Early Childhood Longitudinal Study Kindergarten Cohort of 2010–2011). ***$p < 0.001$; **$p < 0.01$

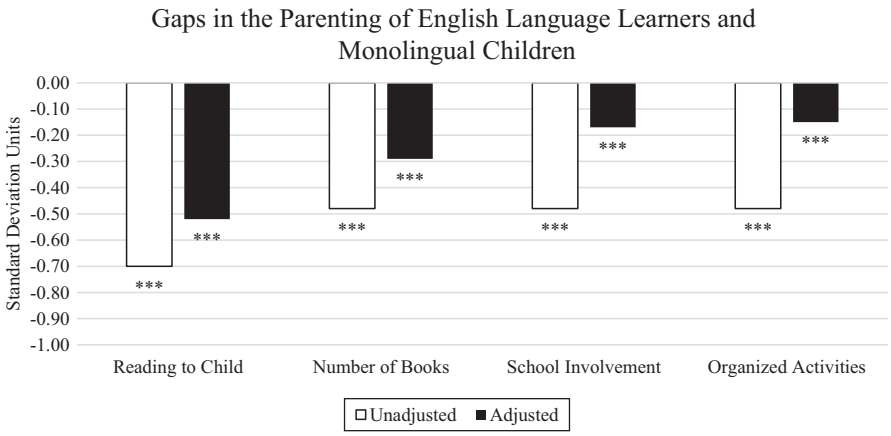

Fig. 3 Disparities in the parenting of English language learners and monolingual children during kindergarten. Notes: Unadjusted models only account for children's home language status. Adjusted models include mothers' educational attainment (Data source: Early Childhood Longitudinal Study Kindergarten Cohort of 2010–2011). ***$p < 0.001$

mothers' educational histories, we find that the preschool enrollment gap between the two groups was greatly reduced, from roughly 15 percentage points to 5 percentage points (see Fig. 2). In fact, each additional year of maternal education was associated with a 15% increase in children's likelihood of attending preschool during the year before kindergarten.

Next, we turn to disparities in the parenting experienced by English language learners and their monolingual peers. As can be seen in Fig. 3, results from these analyses indicated that the parents of English language learners scored 28–70% of a standard deviation lower across all dimensions of parenting as compared with the parents of non-English language learners. When comparing the effect sizes between the unadjusted and adjusted models, we find that approximately half of these differences could be attributed to disparities in mothers' educational histories (see Fig. 3), with a 1-year increase in maternal education resulting in 7–13% of a standard deviation improvement in parenting. When taken together, these results indicate that large gaps exist in the home and school experiences of English language learners as compared with monolingual children, which has downstream effects for their school success. At the same time, however, and similar to children's school performance, we find that a large share of these disparities were rooted in socioeconomic inequality.

Conclusion

In this chapter, we sought to link two contemporary issues of educational research and policy that are both implicated in educational inequality, namely, (a) the transition into kindergarten and (b) the educational experiences of English language learners. To this end, we have discussed why the transition into kindergarten is a

particularly important period in the life course for the growing population of English language learners in the US and highlighted three key themes regarding this transition to formal schooling.

The first key point was that the transition to kindergarten often underlies the long-term socioeconomic and racial/ethnic disparities in educational attainment because once children fall behind as early as kindergarten, they often continue to stay behind throughout the life course (Alexander et al., 2014; Reardon, 2011). Second, we discussed how this stage in life is more amenable to policy intervention as compared with many other mechanisms of inequality and that the economic returns to investments during this period far surpass those that occur later in life (Heckman, 2006). Finally, we wanted to emphasize the relative strengths and weaknesses of English language learners during the transition to kindergarten, with the survey findings from the ECLS-K Class of 2010–2011 revealing some important information about the status of these children and their parents. Specifically, the survey findings summarized above revealed that English language learners enter kindergarten with social-behavioral strengths and while they entered kindergarten behind their monolingual peers in areas of academics, a large share of these disparities was rooted in malleable factors, such as their mothers' educational histories. Moreover, the parents of English language learners were less likely than the parents of monolingual children to engage in the types of parenting behaviors that are often rewarded by the US educational system. Similar to their children's academic achievement, however, a large share of these disparities was attributed to differences in the educational histories of parents. Thus, intervention programs that target both children's and their parents' human capital during this period can potentially reduce educational disparities before it is too late.

Even though the experiences of English language learners are not solely about risk and disadvantage, with their families bringing great optimism to the communities in which they live and the schools in which their children attend, schools rarely take an asset-based approach to their education, and, thus, their strengths and diverse experiences are not fully leveraged by school personnel. To facilitate a more seamless transition to kindergarten and, in turn, promote an equal opportunity to achieve the American dream, schools and communities need to welcome English language learners and their families with an open door and build on the strengths of these children in order to maximize their potential.

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School Readiness and Kindergarten Transitions: Children with Vision Impairment and Blindness

Lisa McConachie

Abstract Given the unique challenges for students with vision impairments, including blindness, a successful transition to and preparation for kindergarten is critical to their future academic success. If children, who are visually impaired, particularly those using braille as their primary learning medium, experience a comprehensive and successful transition process, they will be better prepared to participate in and benefit from the kindergarten classroom. The purpose of this chapter is to describe and explain how children who are visually impaired have a unique developmental experience and have unique educational needs during the preschool years as well as in the transition to and participation in kindergarten. More specifically, the chapter provides background about the topics of vision impairment and blindness and the transition to kindergarten, compares school readiness skills for children with and without vision impairment, describes unique skills that children with vision impairment need in adapting to kindergarten classrooms, and identifies strategies that can effectively support transitions to kindergarten for children who are visually impaired.

Given the unique challenges for students with vision impairments, including blindness, a successful transition to and preparation for kindergarten is critical to their future academic success. If children, who are visually impaired, particularly those using braille as their primary learning medium, experience a comprehensive and successful transition process, they will be better prepared to participate in and benefit from the kindergarten classroom. The purpose of this chapter is to describe and explain how children who are visually impaired have a unique developmental experience and have unique educational needs during the preschool years as well as in the transition to and participation in kindergarten. More specifically, the chapter provides background about the topics of vision impairment and blindness and the transition to kindergarten, compares school readiness skills for children with and without vision impairment, describes unique skills that children with vision impairment need in adapting to kindergarten classrooms, and identifies strategies that can effectively support transitions to kindergarten for children who are visually impaired.

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The Transition to Kindergarten for Children with Vision Impairment and Blindness

Vision impairment including blindness is a relatively rare, low incidence disability compared to the other identified categories of the Individuals with Disabilities Education Act (IDEA). ED Data Express, the US Department of Education website, indicates that 12.9% of K-12 students have an identified disability (US Department of Education, National Center for Education Statistics, 2015); identified vision impairment was 2.4% of the total 12.9% (Erickson, Lee, & Von Schrader, 2013). Under IDEA, "visual impairment including blindness means an impairment in vision, that even with correction, adversely affects a child's educational performance. The term includes both partial sight and blindness" (USDOE, 2004). States define and establish their own unique standards for eligibility for special education and related services, and are not required to use the exact definition in the IDEA; however, state-established standards must not narrow the definition in the IDEA (USDOE, 2004). In general, normal visual acuity is 20/20 in both eyes, while vision impairment is defined as a visual acuity less than 20/70 in the better eye with correction (APH Annual Report, 2014). Blindness is defined as a visual acuity less than 20/200 in the better eye with correction or a field restriction of 20 degrees or less in the better eye with correction (APH Annual Report, 2014). In some states, eligibility for vision impairment and blindness can also be established if the child has an eye pathology or progressive eye disease which is expected to reduce vision to the above criteria, or the assessment results from a licensed ophthalmologist or optometrist are inconclusive, and the student demonstrates inadequate use of vision.

IDEA also requires all IEP teams to annually consider special factors that may affect a child's participation and progress in general education. One of these considerations is for braille. IDEA states:

> In the case of a child who is blind or visually impaired, provide for instruction in braille and the use of braille unless the IEP Team determines, after an evaluation of the child's reading and writing skills, needs, and appropriate reading and writing media (including an evaluation of the child's future needs for instruction in braille or the use of braille), that instruction in braille or the use of braille is not appropriate for the child. (USDOE, 2004, Sec. 300.324(a)(2)(iii))

The assessment most often used to determine the need for braille is the Learning Media Assessment (Koenig & Holbrook, 1995). The Learning Media Assessment (LMA) is an accepted tool completed by the Teacher of the Visually Impaired (TVI) based on professional guidelines but is not a research-based, normed assessment. For the purposes of transition and services, the LMA is a tool to determine the student's primary learning medium and media and primary literary medium or and media. The LMA addresses the efficiency with which the student gathers information from various sensory channels (visual, tactile, auditory olfactory), the types and general learning media (e.g., braille, print, auditory, and enlarged print) the student uses or will use to accomplish learning tasks, and the literacy media the student will use for reading and writing (Koenig & Holbrook, 1995). The LMA is

important as it is used to identify how a student with vision impairment will access the general education curriculum. If the team determines the child is a tactile learner and braille is the primary learning medium, it is imperative the Teacher of the Visually Impaired (TVI), special and general education teachers, and parents begin to plan for the unique needs of a student who uses braille in the classroom. The APH Annual Report captures results of LMAs for all students' birth through age 21 nationally: 8.5% of students were identified as braille readers, 29.2% print, 9.2% auditory, 34.8% nonreaders, and 18.3% pre-readers (APH Annual Report, 2014).

In the United States, the nature and intensity of special education for children who are visually impaired vary from state to state. Currently, 33 residential schools in the United States serve about 8.5% of the visually impaired population (APH Annual Report, 2014). Most students (83%) who have vision impairment or are blind receive educational services through a combination of their public schools and regionalized services (APH Annual Report, 2014). In 2015, 2779 preschool children identified as legally blind transitioned to kindergarten (APH Annual Report, 2015). With the majority of children who are visually impaired, including blindness, attending public school, it is important to include this low incidence population when considering strategies for successful transition to kindergarten.

The perspective taken in this chapter about the transition to kindergarten for children with vision impairment and blindness is grounded in Rimm-Kaufman and Pianta's (2000) ecological and dynamic model of transition. Within this theoretical framework, family, primary caregivers, and teachers are critical in both preschool and kindergarten and play key roles in the transition between the two systems. Community and peers also play critical roles in the model. In addition, Pianta and Kraft-Sayre's (2003) developmental model is used as a framework for discussion and recommendations.

Children who are visually impaired in preschool and transitioning to kindergarten have the same kindergarten readiness expectations as their sighted peers. Even with the unique characteristics of children with vision impairments, the transition to kindergarten remains grounded in effective practices for typical children. Rimm-Kaufman and Pianta (2000) noted the period roughly from age 4 to 7 is identified as a period of change in the "developmental agenda" (p. 43). This period culturally in the United States marks a time where children are expected to begin to increase their independence and responsibility and their social networks begin to change from primarily adult directed to peer directed (Edwards & Whiting, 1988; Rimm-Kaufman & Pianta, 2000). In addition, shifts in cognitive development occur – including enhanced memory, new reasoning abilities, and new strategies for recall – in addition to physiological changes during this developmental time (Flavell, 1988; Nelson, 1996; Rimm-Kaufman & Pianta, 2000; Stauder, Molenaar, & van der Molen, 1993; Thatcher, 1994).

The "developmental agenda" (Rimm-Kaufman & Pianta, 2000, p. 43), however, is based on research of sighted children. There are unique developmental implications for a child who is blind including reluctance from teachers and caregivers to allow for independence, fear for safety, altered expectations, implications for peer relationships, and unique cognitive implications based on a lack of foundation

concepts due to vision loss (Erickson & Hatton, 2007; Fraiberg, 1977; Hatlen, 1996; Landau, 1991; Landau, Gleitman, & Landau, 2009; Lowenfeld, 1981; Perez-Pereira & Conti-Ramsden, 2013; Preisler, 1995; Urwin, 1984a, 1984b; Warren, 1984; Wormsley & D'Andrea, 1997). The unique developmental implications above are generally a result of inadequate information of children who are blind and preconceived notions of blindness.

In addition to the internal changes within the child, the environment of kindergarten is different than either home or preschool. Goals, demands, and the nature of the classroom environment are different, as is the ecology surrounding this new environment. Kindergarten typically has explicit goals for literacy, numeracy, and socialization that were not likely formally stated goals in preschool or home environments (Haines, Fowler, Schwartz, Kottwitz, & Rosenhoetter, 1989; Rimm-Kaufman & Pianta, 2000). The concept of formal instruction with academic and social emotional expectations begins in earnest when a child enters formal schooling. Changing expectations, in turn, change the relationships between teachers and children, school, and families. Contact from teachers and service providers with families becomes less frequent, more formalized, and school directed. There is also an increase in student-teacher ratio and changing expectations between teacher-child interactions (Rimm-Kaufman & Pianta, 2000).

> The new demands of kindergarten place stress on social and emotional competencies as well. Demands such as independence from adults, getting along with other children, recognition and adherence to routine, and being alert and active for longer periods of time can challenge the 5-year-old child. (Rimm-Kaufman & Pianta, 2000, p. 494)

Both the content and the pedagogical approach change dramatically in the transition to kindergarten, becoming more rigorous, with more direct instruction and less child-initiated learning (Farran, 2011).

Rimm-Kaufman and Pianta (2000) cited as influences of their theoretical model the increasing demands of public education as a result of national educational goals including school readiness in the transition to kindergarten. Rimm-Kaufman and Pianta (2000) state, "The primary advantage of research based on the Ecological and Dynamic Model of Transition is that it presents a more comprehensive explanation of the factors that contribute to children's transition" (p. 505). The framework focuses on the interrelationships of child, home, and school. Peer and community factors create a network of relationships that influence a child's transition to kindergarten both directly and indirectly (Rimm-Kaufman & Pianta, 2000). Transition from preschool to kindergarten is complex, multifaceted, and distinct to each school district and school team. The child is situated at the center of the model including change and development over time, as well as the interconnection of the child, family, school, peers, and community (Rimm-Kaufman & Pianta, 2000).

In their developmental model of transition, Pianta and Kraft-Sayre (2003) suggested five guiding principles to form key elements of transition:

1. Foster relationships as resources
2. Promote continuity from preschool to kindergarten
3. Focus on family strengths

4. Tailor practices to individual needs
5. Form collaborative relationships

While these practices were based on recommended practices for all children (Pianta & Kraft-Sayre, 2003), they also form the basis of a successful transition for a child who is visually impaired including blindness.

The developmental model of transition (Pianta & Kraft-Sayre, 2003) incorporates traditional components of transition including the skills of the child, the environmental considerations of the classrooms and school climate, as well as considerations of the connections between preschool and kindergarten environments. The developmental considerations over time along with interconnection and interdependency among community, family, peers, teacher, and the child make this model along with the ecological and dynamic model of transition (Rimm-Kaufman & Pianta, 2000) unique and comprehensive particularly for children who are visually impaired, including blindness. In the following section, school readiness will be addressed specifically for children with vision impairment within the context of the key domains of school readiness identified by the National Education Goals Panel.

School Readiness for Children with and Without Visual Impairment

The National Education Goals Panel identified five key domains of school readiness including physical well-being and motor development, social and emotional development, approaches to learning, language development, and cognition and general knowledge (Kagan, Moore, & Bredekamp, 1995). It is important for educators involved in the transition of a child who is visually impaired including blindness to have a foundational understanding of kindergarten readiness and the unique developmental characteristics and needs of children with vision loss. This section will compare sighted and visually impaired learners in the dimensions of the five key domains of school readiness.

Developmental milestones and profiles for children who are blind are unique to each individual child and dependent on the etiology of their vision loss, severity and age of impact, as well as co-occurring disabilities (Hatton, Bailey, Burchinaland, & Ferrell, 1997). For children with severe vision loss resulting in the use of braille, researchers have identified delays in global development when compared to sighted children (Ferrell, 1986; Fraiberg, 1977; Hatton et al., 1997; Reynell, 1978). Those areas include cognitive development, social and emotional development, language development, and gross and fine motor development (Hoben & Lindstrom, 1980; MacCuspie, 1996; Warren, 1984). Some researchers suggested delays might be due in part to deficiencies in stimulation to all the senses or the lack of motivation, overprotection, or the fear of actual or perceived dangers (Rettig, 1994; Schneekloth, 1989). It important to note, however, that developmental delays should not deter educational teams, including families, from having high expectations for success

and educational achievement. The following section summarizes developmental research regarding children who are visually impaired, including blindness. Having even a minimal amount of residual vision can mitigate the developmental impact of blindness. However, understanding the impact of blindness can inform participants in the transition process of additional skills and knowledge above traditional kindergarten readiness, needed to successfully transition to kindergarten.

Cognition and General Knowledge Researchers suggested the possibility that cognitive abilities develop more slowly or in a different way for children who are blind (Fraiberg, 1977; Lowenfeld, 1964; Warren, 1984). Lowenfeld (1948) asserted that lack of vision affects cognitive development by restricting the range and variety of experiences, the ability to move in and around the environment, and the control of the environment and self in relation to the environment. Foulke, Amster, Nolan, and Bixler (1962) noted that the lack of vision creates restricted experiences for the child who is blind and that touch does not serve to mediate two-dimensional representations of three-dimensional objects (Warren, 1984). The sense of touch for children who are blind does not serve the same function as sight does for the sighted child (Warren, 1984). Children with significant vision loss do not reach for objects or move out into their environment until they understand objects exist. Hatton et al. (1997) indicated that cognitive and motor development is "inextricably linked in early development of children who are visually impaired" (p. 802). In addition, the child who is blind is more dependent on secondhand experience conveyed verbally from other people; therefore they are more dependent on verbal development and aptitude to reach and achieve cognitive milestones.

Social and Emotional Development When children are blind, they are dependent on familiar voices and experiences in interaction to understand themselves in relation to others which results in limited early social experiences which could lead to long-term difficulties in social understanding (Brown, Hobson, Lee, & Stevenson, 1997). A review of literature revealed that children who are blind might have deficits in play and these deficits are related to delays in several social and emotional domains (D'Allura, 2002; Erwin, 1994; Fraiberg, 1977; Fraiberg, Smith, & Adelson, 1969; Rogers & Puchalski, 1984). Significant areas of delay include the areas of play and social interaction as well as development of self and self-awareness (Rettig, 1994). Schneekloth (1989) and Erwin (1993) observed that children who are blind spend more time playing alone and more time in adult interactions versus peer interaction. Children who are blind tend to be egocentric and more interested in their own bodies than in their environment (Parsons, 1986). Children who are blind are also much more likely to be the recipients, rather than initiators, of interaction (D'Allura, 2002).

Early social emotional developmental milestones may be delayed for children who are blind, including the development of theory of mind, the idea that people can make sense of others' behavior and navigate social interactions by hypothesizing about feelings, desires, and beliefs that motivate their actions (Dunn, 1988; Hughes & Leekam, 2004). The theory of mind allows people to explain, predict, and

manipulate the behaviors of others (Hughes & Leekam, 2004). Sighted children begin to develop this understanding typically around age 4 (Hughes & Leekam, 2004). The theory of mind has a foundation in early childhood development in perspective taking and joint attention, two developmental milestones that are significantly impacted by lack of vision (Hughes & Leekam, 2004).

Joint visual attention allows an infant to participate in shared reference and communication about a shared experience. By the end of the first year, the use of eye gaze with pointing to clarify an object of shared reference and experience is recognized as an important cognitive milestone (Bates, 1979; Hughes & Leekam, 2004; Piaget, 1955). Shared reference is further delayed and restricted to topics that are often confined to the environment in close proximity of the child and are mostly child centered (Kekelis & Anderson, 1984). Children who are blind are at significant risk to not develop the ability to recognize vocally expressed emotions to compensate for their lack of access to visual cues such as facial expressions, gestures, or body postures as well as the development of social understanding and social relationships with peers and adults (Hughes & Leekam, 2004; Minter, Hobson, & Pring, 1991).

With regard to imaginative play and use of toys, children who are blind spend a significantly lower percentage of time engaged in functional toy use and engage in significantly more stereotypical behavior during play (Parsons, 1986; Rettig, 1994). Children who are blind generally display less creativity and imagination in their play and are less interested in toys and play than their sighted peers (Rettig, 1994; Warren, 1984). Children who are blind do not generally reach out for toys and need extra time and support to discover what and where their toys are and what to do with them (Rettig, 1994).

Language Development Language has many functions including communication, social interaction, categorization, and organization of thought (Pring, 2005). Language development may be impacted immediately at birth if a child has no vision to establish eye contact with primary caregivers, a critical factor in attachment and socialization process (Fraiberg, 1977; Preisler, 1995; Rogers & Puchalski, 1984; Troster & Brambring, 1992). "Preverbal communication, particularly imitation and social reciprocity, is highly dependent on vision, as infants and parents learn to read and respond to each other, both socially and verbally, through visual observation and attention" (Hatton et al., 1997, p. 788). Researchers suggested that children with visual impairments acquire language within the age range of sighted children; however, they also documented differences in the types of words acquired and in the use of words (Andersen, Dunlea, & Kekelis, 1984; McConachie & Moore, 1994) as well as challenges with reciprocity, pragmatics, and referentialism (Andersen et al., 1984; Bigelow, 1987; Dunlea, 1989; Hatton et al., 1997; McConachie & Moore, 1994; Mills, 1988; Mulford, 1988; Preisler, 1995). Finally, researchers reported delays in attainment of object concept by children with significant vision impairments (Bigelow, 1990; Fraiberg, 1977; Hatton et al., 1997; Rogers & Puchalski, 1988).

A noted relationship exists between play and language development, particularly the relationship of symbolic play and the use of "I" and "no" (Rettig, 1994). Children who display symbolic play are more likely to use the word "no" and to use two-word sentences (Rogers & Puchalski, 1984). Rogers and Puchalski (1984) also pointed out that the use of the word "no" is a critical step in a child's sense of autonomy. Children who are blind do not show signs of imaginative play until much later than their sighted peers, delaying the use of pronouns (Rogers & Puchalski, 1984).

Children who are blind ask more questions of adults than their sighted peers (Tait, 1972). Researchers suggested they ask more questions to further their understanding of the environment, to gain information, or to gain assurance before attempting an action (Fraiberg & Adelson, 1973; Rettig, 1994; Rogers & Puchalski, 1984). Children who are blind also use the strategy of asking questions to maintain open lines of communication with adults (Rettig, 1994).

Physical Well-Being and Motor Development Delays in reaching motor milestones and qualitative differences in locomotion and fine motor skills have been documented by many researchers (Brown & Bour, 1986; Ferrell, Trief, Deitz, & Bonner, 1990; Fraiberg, 1977; Hatton et al., 1997; Norris, Spaulding, & Brodie, 1957; Troster & Brambring, 1992). Typically, children who are blind are less active than their sighted peers which some researchers attribute to fear of movement, spatial disorganization, hypotonia, and parental fear of harm and subsequent restrictions (Brown & Bour, 1986; Hatton et al., 1997; Jan, Robinson, Scott, & Kinnis, 1975; Sonksen, Levitt, & Kitzinger, 1984). Delayed development in object concept has also been associated with delays in reaching and locomotion (Fraiberg, 1977; Hatton et al., 1997; Troster & Brambring, 1992). In sum, these factors interact to delay motor development and lead to restricted direct experiences with the environment that facilitate cognitive and language development (Hatton et al., 1997).

Approaches to Learning Generally the concept of approaches to learning means emotional, behavioral, self-regulation, and executive functioning skills (USDHHS, 2015). When applied to kindergarten readiness, these skills generally manifest as paying attention, impulse control, persistence on task, and curiosity. This area of development has not been the focus of research for children who are visually impaired or blind. However, as previously stated, for children with severe vision loss resulting in the use of braille, researchers have identified delays in global development when compared to sighted children (Ferrell, 1986; Fraiberg, 1977; Hatton et al., 1997; Reynell, 1978).

Delays related to this area of kindergarten readiness may include social interaction with peers and adults, a delay in maintaining focus, paying attention to the correct or requested stimuli, attention and common focus, initiative, curiosity, and persistence on task. These are often skills learned incidentally through social interactions in the home and preschool environment. This area of development will require as much attention as traditional cognitive, academic, and motor skills to ensure that as children enter kindergarten, they have developed self-regulation, resiliency, and initiative to begin to advocate for their needs and preferences. For

children with vision impairment, this area of development will also include self-advocacy and the ability to understand and communicate their visual needs in the classroom to adults as well as peers.

Additional School Readiness Skills for Children with VI and Blindness

While there are unique developmental characteristics for children who are visually impaired, there are also unique curriculum considerations, particularly when a child reads braille. It is important that curricula are rigorous, relevant, and aligned between preschool and kindergarten. Curricula for children who are visually impaired include the core curriculum as well as a specialized curriculum to address skills related to vision loss.

The notion that children who are visually impaired have additional skills and knowledge needs beyond the core curriculum has been a topic discussed by professionals for many years (Hatlen, 1996; Sapp & Hatlen, 2010). The concept has been identified by many names such as specialized curriculum, disability-specific skills, nonacademic curriculum, and most recently the expanded core curriculum (ECC) (Hatlen, 1996). The ECC does not replace the traditional core curriculum; it identifies needed skills and knowledge in addition to the core curriculum unique to children who are visually impaired or blind. There are nine areas identified in the ECC intended to identify the skills and knowledge a blind child needs to learn to access and succeed in the core curriculum. ECC areas include (a) compensatory or access skills, (b) independent living skills, (c) orientation and mobility, (d) recreation and leisure, (e) social interaction skills, (f) self-determination, (g) assistive technology, (h) career education, and (i) sensory efficiency (Hatlen, 1996). The ECC is a curriculum taught by Teachers of the Visually Impaired (TVI) and Orientation and Mobility Specialists who are trained in these unique skills and instructional strategies. The ECC is necessary for children who are visually impaired due to the unique nature of their disability. Many skills included in the ECC are skills and knowledge that children who are sighted learn incidentally by observing others, understanding and interpreting nonverbal information, and modeling adults and/or peers in the typical environment. Table 1 provides a summary of the nine areas of the ECC.

When considering transition for children with vision impairment, it is important to be familiar with the unique personnel in the education of a child with visual impairment. A *Teacher of the Visually Impaired* (TVI) is a teacher with a specific endorsement or certification to teach children who are visually impaired. TVIs work with team members to understand a child's vision impairment, the impact of the vision loss, and to support accommodations or adaptations to increase access to the general education curriculum and environment. The role of the TVI includes teaching specialized skills including the expanded core curriculum, conducting assessments to determine specialized goals, serving on the IFSP and IEP teams, and preparing or obtaining alternative formatted textbooks and educational materials.

It is critical that TVIs understand the changing nature of kindergarten and teach children who are visually impaired the skills they need for the general education classroom. As identified in research, it is important to focus on school readiness that includes cognitive/pre-academic knowledge and skills, communication skills including both receptive and expressive language, and the development of social learning behavior (Farran, 2011; Fitzpatrick, McKinnon, Blair, & Willoughby, 2014; Fitzpatrick & Pagani, 2012; Goldstein, Warde, & Peluso, 2013; Justice, Petscher, Schatschneider, & Mashburn, 2011; Sabol & Pianta, 2012; Shaul & Schwartz, 2014; Weiland & Yoshikawa, 2013).

An *Orientation and Mobility Specialist* teaches navigation and travel skills to individuals with visual impairment. Their role includes teaching safe travel within the classroom, the school environment, and the child's neighborhood. Orientation and Mobility Specialists provide specially designed instruction to the child as well as provide consultation to the educational team and the child's peers to ensure safe and independent travel for the child with vision loss. Orientation and Mobility Specialists are a part of the IFSP and IEP team.

It will be beneficial for both TVIs and Orientation and Mobility Specialists to be familiar with kindergarten readiness as defined for sighted children including the Head Start Early Learning Outcomes Framework (US Department of Health and Human Services (USDHHS), 2015). Standard-based education in the areas of literacy, language, and mathematics in prekindergarten is becoming a critical part of many state's systems of education service delivery (Neuman & Roskos, 2005). States are identifying the need for children to have foundational knowledge as they enter kindergarten that aligns with common core K-12 standards; all 50 states have identified early learning standards for children age 3–5. Bowman, Donovan, and Burns (2001) suggested "the accumulation of convincing evidence from research [is] that young children are more capable learners than current practices reflect and that good educational experiences in the preschool years can have a positive impact on school learning" (p. 2). Early childhood educators, including TVIs and Orientation and Mobility Specialists, are increasingly held accountable for measurable outcomes in domains that include academic, social, emotional, and behavioral expectations. Understanding of expectations for kindergarten readiness among preschool, kindergarten, and the unique personnel teaching children who are blind or visually impaired can contribute to a more coherent approach to educating young children and increasing a child's preparedness and success in early elementary school and beyond (Hyson & Biggar, 2006; Scott-Little, Kagan, & Frelow, 2006).

Recommendations for a Successful Transition for Children with VI and Blindness

Due to the low incidence nature of vision impairment and blindness, when a teacher has a child with this disability in their classroom, this is typically their first experience. There are often concern, fear, and sometimes resistance to having a child with blindness or vision impairment in the general education classroom. This often is a

result of concerns regarding safety for the child or the concern that the teachers, including general and special education, do not know how to teach, modify, or accommodate instruction to meet the needs of the child. As previously mentioned, Pianta and Kraft-Sayre's (2003) developmental model of transition has five guiding principles to form key elements of transition. In the following section, each principle is addressed along with recommendations and guidance to support the successful transition from preschool to kindergarten for a child who experiences vision impairment or blindness.

Foster Relationships as Resources Forming collaborative teams and establishing positive relationships is essential in the successful transition from preschool to kindergarten for all children. For a child who is visually impaired, unique personnel including the TVI and Orientation and Mobility Specialists will be integral participants. The TVI and Orientation and Mobility Specialists will have knowledge and information specific to the disability including areas of the ECC. The teacher for special education will have knowledge and information regarding policies and procedures of the school district, as well as information if there are additional or coexisting disabilities. The general educator will have knowledge and information specific to the core curriculum and educational expectations. All members of the educational team are inextricably intertwined and dependent on each other for a successful transition to kindergarten.

When planning the transition from preschool to kindergarten, Pianta and Kraft-Sayre (2003) suggest recommendations to support a collaborative and positive working team which include:

1. Identify the kindergarten teacher as soon as possible during the child's preschool year.
2. Identify a transition coordinator who can arrange regular meetings between the preschool and kindergarten team.
3. Develop ideas for transition activities. These will include unique activities due to vision loss such as orienting the child to the school, classroom, and playground and possible accommodations to the physical environment (marking steps, braille signs, and so on).
4. Identify activities to strengthen the relationship between the family and the school. Be sure to include the principal, school secretary, and other school staff.
5. Include sighted peers in the transition process. As previously stated, social skills may need to be explicitly taught. Planning for this instruction in a natural environment yields the most successful results and promotes generalization.

A key step is identifying a transition timeline, which needs to include additional time for collaboration between the TVI and general education teacher. The nature and needs of a child who is visually impaired require a TVI to be integral in education programming, meaning they will be in the classroom often and will partner to adapt or modify materials for access. TVIs are rarely in a classroom daily, and so a system of consistent communication should be established. Initially this may be overwhelming to the general education teacher to communicate regarding an

individual child; however, creating the foundation of a working relationship is essential. Communication does not have to be lengthy; short weekly meetings can assist in co-planning accessible materials, collaborating on instructional strategies, and creating effective communication.

Promote Continuity from Preschool to Kindergarten TVIs will have key roles in promoting continuity from preschool to kindergarten by providing specially designed instruction in alignment with expectations for sighted children. Expectations for skill development should be similar to sighted children including academic and curriculum expectations as well as social emotional expectations. Tools and resources for TVIs for preschool and kindergarten readiness can be found in the Head Start Early Learning Outcomes (USDHHS, 2015) as well as on many state departments of education websites. While the role of the TVI is in the area of the expanded core curriculum (Hatlen, 1996), there is considerable alignment with readiness skills and the core kindergarten curriculum.

The Orientation and Mobility Specialist has a unique role in transition and continuity by supporting the child's understanding and knowledge of the respective environments. This is essential for children with vision impairment; understanding the physical environment is complicated and essential for a sense of security and access. This is a unique opportunity for the child to visit their classroom and become familiar with their school building, locating specific areas such as the cafeteria, bathrooms, school office, library, and so on. Children who are blind or with significant vision impairment will use a long cane for independent navigation or human guide when traveling in a large group. It is important for the educational team to understand it might take extra time for the child to learn their environment and to learn independent travel skills. The Orientation and Mobility Specialist will have the background and knowledge to help teams understand travel needs or concerns for the child.

Focus on Family Strengths Family involvement is key to a successful transition, including viewing family as significant in collaboration and as a resource in the transition (Pianta & Kraft-Sayre, 2003; Rimm-Kaufman & Pianta, 2000). Children with vision impairment are often identified before the age of 5 and receive special education services prior to kindergarten. Often the TVI will transition with the family from preschool to kindergarten. Families transitioning to kindergarten already have knowledge and information regarding their child's vision loss and resulting developmental needs. Acknowledging this information and actively listening to families will not only strengthen the relationship between the family and school; the school team will also learn essential information about the child. A key transition activity should include assessing the families' current needs, questions, and concerns regarding transitioning to kindergarten. Expect to have periodic contact with the family before, during, and after the transition to kindergarten.

The role of the TVI and Orientation and Mobility Specialists also includes instruction for children and families in the home related to the vision impairment. Often the components and skills of the ECC are most appropriately taught in the home as well as the school environment. These skills include concept development,

daily living skills, and orientation and mobility skills. TVIs and Orientation and Mobility Specialists will also work with children and their sighted peers in neighborhoods and community preschools.

A means to capitalize and strengthen family connection is to connect families in the school community. Having a child with a disability can be an isolating experience, even more so for families who experience vision loss. When planning family nights, workshops, and school transition events, reach out to the family to explain accommodations that are available and those that can enhance participation. Having materials in braille or with tactile adaptations can enhance participation of the child and family.

The role of the TVI will be to connect the family to community resources specific to vision loss. Resources may include national organizations for the blind, residential school services, and the medical community.

Tailor Practices to Individual Needs A quality preschool experience is essential for children with vision impairment to teach the additional skills and knowledge needed to transition to kindergarten. The type of preschool may vary from a community preschool setting to a specialized special education classroom. Recommended transition practices should be considered and planned between the preschool and school age team. In addition, there are unique and distinct considerations for a child with vision impairment, particularly those who use braille. When a child who is visually impaired transitions, there is a significant amount of adaptation of curriculum materials. Translating into braille is not the same as retyping or copying; braille production takes time and ideally is completed by a certified braillist. Braille materials and equipment for a child who is blind or visually impaired also require additional desk or shelving space in the classroom. Collaboration and communication between the general education teacher and TVI prior to the year beginning can assist in problem-solving the need for additional space as well as other considerations for transition. Creating a welcoming educational environment may include having braille books in the classroom and school library, having magnifiers available, and encouraging the child to move to the front at circle time or during instruction. Using braille labels helps the child to read others' names, their cubby location, coat hook, and so on. As with a sighted child, incidental exposure to braille increases literacy.

Form Collaborative Relationships Collaboration, communication, and productive relationships are the key to a successful transition for all children. Researchers consistently cite collaboration and relationships as key elements of a successful transition (McWayne, Fantuzzo, Cohen, & Sekino, 2004; Pianta & Kraft-Sayre, 2003; Rimm-Kaufman & Pianta, 2000). Effective strategies and structures for collaboration among team members foster positive and productive relationships, which, in turn, lead to a successful entry to kindergarten (McWayne et al., 2004; Pianta & Kraft-Sayre, 2003; Rimm-Kaufman & Pianta, 2000).

Continuity between preschool and kindergarten will be supported through collaboration between TVIs and general education teachers. For TVIs, their role is primarily access to the curriculum and the ECC; however, an understanding of

pedagogy and instructional curriculum is crucial for a successful transition to kindergarten. Given that blindness is a very low incidence of disability, having a blind student for the general education teacher is likely a unique experience in a classroom teacher's career. Thus, collaboration between general educators is an opportunity to share resources, helpful strategies, and problem-solving.

As previously stated, key members of the transition team will be the TVI and Orientation and Mobility Specialist. In the transition for a child with vision loss, collaboration may require a longer-term commitment. The initial transition process, including collaboration and resulting relationships with key personnel, will last far longer into the child's school year. It is important for the relationship between specialized personnel and the general education teacher to be productive and positive from the beginning. Collaboration is a two-way street, requiring the TVI, Orientation and Mobility Specialist, and classroom teacher to establish common goals for the child as well as a consistent communication strategy. Information will need to be shared on an ongoing basis, so establishing a consistent communication strategy early in the transition process will be essential. As the TVI and Orientation and Mobility Specialist are likely itinerant teachers, the use of technology may be an ideal solution to time constraints for classroom teachers.

Conclusion

This chapter described the unique developmental and educational needs for children with vision impairment, to assist in the planning and implementation of transition from preschool to kindergarten. All children, when transitioning from preschool to kindergarten, will benefit from a comprehensive, planned transition process; however, children with vision impairment, including blindness, have unique needs due to the complexity of their disability and resulting educational impact. Using the ecological and dynamic model of transition (Rimm-Kaufman & Pianta, 2000) along with Pianta and Kraft-Sayre's (2003) five guiding principles for successful transition can create a foundation for educational teams supporting children and their families from preschool to kindergarten. For all children, the transition to kindergarten sets the foundation for future academic and educational success. For children with vision impairment, including blindness, intentional planning, communication, and forming productive and collaborative relationships among school personnel and with families will lead to a successful transition from preschool to kindergarten and future academic success.

In summary, having a child with vision impairment, especially a child who reads braille, is a unique experience in the classroom. Collaboration, planning, and capitalizing on family strengths will aid in the successful transition from preschool to kindergarten. Due to the low incidence nature of this disability, this will likely be the general education teachers' first experience with a child who is visually impaired. Developing a comprehensive plan for transition will help to reduce anxiety and increase the likelihood of a successful entry into kindergarten.

Resources

American Foundation for the Blind
www.afb.org
Helen Keller National Center for Deaf Blind Youth and Adults
www.helenkeller.org/hknc
National Federation of the Blind
https://nfb.org//
Perkins School for the Blind: Support for Educators
www.perkins.org/elearning
Texas School for the Blind
www.tsbvi.edu/

Appendix

Table 1 Expanded core curriculum for blind and visually impaired (Sapp & Hatlen, 2010)

Expanded core curriculum area	Definition
Compensatory or access skills	Refers to concept development, skills in organizational, speaking and listening, and accommodations including braille, optical devices, digital access, and tactile symbols
Career education	Children who are sighted learn vocational opportunities and work habits through visual observation; those who are blind do not and require specialized and direct instruction
Independent living skills	Includes personal hygiene, food preparation, financial management, and organizational skills
Orientation and mobility	A systematic method to teach blind and visually impaired children to travel in their environments including school, home, neighborhood, and community
Recreation and leisure	Includes specific sports and activities designed for blind individuals as well as learning skills of typical sports and activities
Social interaction skills	Observing peers or adults involved in social interactions within natural environments supports the learning of social skills. Children who are blind are unable to access incidental learning of social skills and norms. Nuanced social skills require direct instruction
Self determination	Refers to the process by which a person controls their own life and makes their own decisions and choices without undue influences
Assistive technology	Refers to technology to support learning and access to the general education curriculum. Includes universal technology such as computers, tablets, and mobile devices as well as specialized technology including optical and magnification devices, braille displays and embossers, and specialized mobility devices
Sensory efficiency	Refers to the use of residual vision as well as using other senses to gain information from the environment or to access curriculum

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Children's Temperament and the Transition to Kindergarten: A Question of "Fit"

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Abstract Temperament, or biologically based differences in individuals' reactionary and regulatory mechanisms to their environment (Rothbart MK, Bates JE. Handbook of child psychology: social, emotional, and personality development. Wiley, New York, 2006), comprises multiple dimensions which have been implicated in enhancing or inhibiting children's school readiness. This chapter seeks to provide readers with a primer of five temperamental dimensions and their status as protective or risk factors for preschool students' transition to kindergarten: shyness, activity, exuberance, adaptability, and effortful control (temperamental self-regulation). We begin by defining each temperamental dimension and summarizing how extant research has shown how each temperament dimension facilitates or impedes children's successful transitions into kindergarten. Next, we present classroom-level strategies that facilitate good "fit" between different temperament dimensions and classrooms and the role of temperament in building student-teacher relationships. Finally, we review two empirically supported interventions as exemplars for facilitating good "fit" between temperament and classrooms (i.e., the *INSIGHTS* and *Banking Time* interventions). These exemplar interventions emphasize psychoeducation of temperamental dimensions and seek to promote classrooms which are sensitive to students' unique temperamental needs.

As she settles into the read-aloud chair, Mrs. Penner, an experienced kindergarten teacher, invites a shy student to sit a little closer to her. She tells an exuberant child, "I thought of you when I picked this book – it's high energy!" With a smile, she beckons a solitary student to join the group. As the children quiet down, she signals their attention with a special hand clap. Twenty pairs of hands clap back in unison, as the children sit with legs crossed, looking up at her expectantly. Although there are moments when Mrs. Penner demands such uniformity in her students, what she enjoys *most* about teaching is working with their varied personalities. Indeed, Mrs.

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Penner's thoughtful responsiveness to the individual differences of her students indicates an understanding of each child's *temperament*, an important concept in child development and a useful tool for teachers of young children.

Temperament describes the biologically based individual differences in reactivity and regulation that affect a child's emotional or behavioral response patterns in different environments (Rothbart & Bates, 2006). An example of these differences may be one child's ability to concentrate on reading in a noisy room, while another may become frustrated from the same task. In working with children, viewing them through the lens of temperament allows us to simultaneously consider the emotional, biological, and cultural mechanisms underlying such differential behaviors. Temperament data can thus be a powerful tool for use not only in assessment and intervention but in building relationships with children.

The first modern researchers to use the term "temperament" in publication were Alexander Thomas, Stella Chess, and colleagues (Thomas, Chess, Birch, Hertzig, & Korn, 1963), psychologists who noted consistent "primary reaction patterns" in their pediatric clients. By analyzing extensive interviews with the parents of 3–6-month-olds, Thomas, Chess, and Birch (1968) identified nine dimensions of temperament in infants, further refined into three broad temperamental categories: *easy*, *difficult*, and *slow-to-warm-up*. *Difficult* children were fussy and reacted quickly and loudly to novel stimuli, while *easy* children were calmer and reacted more positively when confronted with a change in their environment. *Slow-to-warm-up* children initially showed the traits of a difficult child when confronted with a stimulus, but later relaxed into a profile more like that of an "easy" child as they became acclimated to a situation.

Additionally, Thomas and Chess (1977) were first to propose the theoretical framework of *goodness-of-fit*, which refers to the extent to which parents or caregivers are able to accept and accommodate a child's temperamental characteristics. An exuberant parent, for example, may respond to a shy child with frustration or anger, and a more inhibited parent may also find it challenging to manage a high-approach or high-activity child. The child's psychological development is optimized when caregiving practices align with the child's temperament, demonstrating *goodness-of-fit* (Thomas & Chess, 1977).

Temperament research has flourished since the late 1970s; in the past three decades, researchers have produced myriad theoretical fine-tunings of the concept (Buss & Plomin, 1984; Goldsmith & Campos, 1982; Kagan, Snidman, Arcus, & Reznick, 1994). In the early 1980s, Mary Rothbart and colleagues began conducting extensive statistical and theoretical analyses of available data on temperament with the goal of developing stage-appropriate measures that could extend beyond infancy to any age group. Of equal importance, Rothbart's work has also focused on refining a cohesive theoretical understanding of temperament across the lifespan (Rothbart, 2011).

For Rothbart and colleagues (Rothbart & Bates, 2006; Rothbart & Derryberry, 1981), a person's temperament is composed of physiologically based reactionary

and regulatory mechanisms that influence both overt behaviors, like motor activity and attention, and emotional reactions, like negative affect (Rothbart & Derryberry, 1981). This "psychobiological" approach to temperament is based on two processes, *reactivity* and *regulation*. The first process, *reactivity*, describes neurobiological mechanisms that drive a child's involuntary, automatic reactions to stimuli in the environment. Through *regulation*, the second process in the model, a child works to control this reactivity through self-regulatory strategies such as effortfully shifting attention or inhibiting a response.

To measure temperament in children, Rothbart and colleagues developed the Children's Behavior Questionnaire (CBQ) (Rothbart, Ahadi, Hershey, & Fisher, 2001). The CBQ measures 15 temperament dimensions, which are further refined into 3 major groups of traits: negative affect (anger/frustration, discomfort, fear, sadness, and soothability), surgency (activity level, impulsivity, high-intensity pleasure, and shyness), and effortful control (attentional focusing, inhibitory control, low-intensity pleasure, and perceptual sensitivity).

Although a person's temperament is founded on reactive and regulatory capacities present at birth, temperament is only one piece of a child's developing personality (Rothbart & Bates, 2006). How these traits are expressed will be moderated by the child's maturation and experiences (Rothbart, 2011; Stuss, 1992). Temperament is thus a "general tendency" and can be "redirected" (Rothbart & Bates, 2006). When predicting child outcomes, temperament must therefore be considered in concert with a child's social environments (Tarullo, Milner, & Gunnar, 2011). Thus, viewing temperament in concert with a child's environment may often be a better gauge of developmental trajectory than considering temperament in isolation (Berdan, Keane, & Calkins, 2008). For example, children with greater negative affect or poor effortful control are at risk for school adjustment problems (for review, see Al Hendawi, 2013), yet having a positive peer environment has been shown to buffer against these temperamental risk factors and support classroom success (Keogh, 2003). Because children's behavior in preschool and at the transition to kindergarten is less stable and more malleable than at later ages, viewing behavior problems through the lens of temperament can inform early interventions (Keogh, 2003; Smith, Calkins, Keane, Anastopoulos, & Shelton, 2004) and give insight into school readiness (Pianta & Walsh, 1996).

This chapter explores five temperamental dimensions: shyness, activity, exuberance, adaptability, and effortful control (temperamental self-regulation). Each of these dimensions has been found to be either a risk or protective factor for children in preschool settings and at the transition to kindergarten. In this chapter we will identify how each temperament dimension facilitates or impedes children's successful transitions into kindergarten. Finally, we will present classroom-level strategies that facilitate good "fit" between different temperament dimensions and classrooms, including a review of empirically supported interventions specifically designed for this purpose.

Temperament as a Risk and Protective Factor During the Kindergarten Transition

Shyness

Shyness is typically defined as an individual's feelings of uneasiness or hesitation when faced with an unfamiliar situation (Coplan & Armer, 2007). It can include feelings of unease or discomfort while in unfamiliar situations and a fear of social evaluation from peers (Asendorpf, 1991; Zimbardo, 1977). Shyness has consistently been found to be a risk factor for children's success, as it can hinder both academic performance and social interactions. Shy children may often feel uncomfortable in educational settings because of the particular demands of a classroom, including collaborating with peers, asking for help when needed, taking risks in problem-solving, and stepping out of their comfort zone to explore new things (Levin & Hart, 2003; Spere, Evans, Mansell, & Hendry, 2007). For shy children, these everyday tasks may be quite difficult. Research has shown that shy children often perform worse on standardized tests (Ialongo, Edelsoh, Werthamer-Larsson, Crockett, & Kellam, 1995; Nowakowski et al., 2009) and also tend to show more anxiety and helplessness than their non-shy classmates during testing (Hirvonen, Aunola, Alatupa, Viljaranta, & Nurmi, 2013).

Shy children are less academically engaged, less likely to take academic risks, less likely to receive interventions, and in the face of task difficulty less likely to persist and more prone to withdrawal than their non-shy peers (Hughes & Coplan, 2010). Shy children may try to "blend in" to the background of the classroom in order to avoid being put on the spot and potentially being embarrassed in front of others. Additionally, Koplow (1983) posited that socially anxious and seemingly unresponsive children might lapse into daydreaming as an "escape" from their anxieties. As such, if a teacher perceives that a child has poor engagement in the classroom and appears uninterested in the material, the teacher may attribute this to unpreparedness and/or lower intellectual ability. Perhaps a greater risk, however, is how often shy children's difficulties are overlooked by their teachers. Compared to children who are disruptive, children who are shy and inattentive may be at a greater risk for academic performance problems because the shy children's withdrawal may prevent teachers from noticing academic deficits as early as they would with less shy students (Finn, Pannozzo, & Voelkl, 1995). Indeed, a number of studies have found that shy children's academic problems tend to go unnoticed by teachers (Brophy & Evertson, 1981; Keogh, 2003; Rudasill & Rimm-Kaufman, 2009; Swenson, 2015).

Aside from reduced classroom engagement, shy elementary children also report lower levels of self-esteem compared to their non-shy peers (e.g., Coplan, Findlay, & Nelson, 2004; Crozier, 1995; Zimbardo, 1977). Coplan and Rudasill (2016) identified low self-esteem as the most concerning long-term risk of shyness in childhood because self-esteem involves mental health, understanding of the self, and self-competence and informs goal setting. Thus, shy children risk entering cycles

wherein their low self-esteem precludes them from engaging in class, leading to further deficits in classroom performance.

Shy children typically present with strong hesitancy to speak up in conversation or to volunteer answers to the class when prompted. This often occurs because of a fear of becoming embarrassed or nervous in front of others (Asendorpf & Meier, 1993; Crozier & Badawood, 2009; Evans, 1987). This reluctance to speak supports research that has found that shy children have less developed language skills than their non-shy peers (e.g., Evans, 1987, 1993, 1996; Prior et al., 2008; Rudasill, Rimm-Kaufman, Justice, & Pence, 2006). These underdeveloped language skills may occur because shy children do not speak as often as their non-shy peers and therefore do not have the opportunities to develop and practice their language skills. However, it may be that these weak language skills are the result of a deficit in performance, rather than a deficit in competence (Coplan & Armer, 2005; Coplan & Evans, 2009; Crozier & Hostettler, 2003). In other words, shy children may not have a deficit in language skills, but rather have a difficulty in expressing themselves in social situations. This produces a cyclical pattern in the interactions between shy children and their teachers, where teachers ask shy children more questions than their non-shy peers and the shy children either don't respond or give short responses, which only prompts further questions from the teachers (Evans, 1987). It may be that probing shy children for answers leads them to develop even more anxiety or fear, which leads to further silence and fear of speaking. These cyclical interactions may do more harm than good in easing the child into conversation and making them feel comfortable.

Coplan and Prakash (2003) found that shy children receive more initiations for interactions from their teachers but do not initiate interactions with teachers on their own. This reinforces the notion that shy children are not comfortable speaking up or asking for help when needed. Teachers report that the interactions that they do have with shy children are short, strained, and often uncomfortable (Swenson, 2015). Additionally, the relationships that shy children form with their teachers are often described as dependent and "clingy," but not close (Birch & Ladd, 1997; Rudasill et al., 2006; Swenson, 2015). Therefore, shy children begin at a disadvantage in the classroom, both socially and academically, because they interact less with their peers, they may have cognitive or academic deficits overlooked, and teachers may have more difficulty engaging them. However, as will be highlighted later in the chapter, targeted interventions and specific teaching practices may help to mediate some of negative effects associated with children's shyness.

Activity

Temperamental activity refers to the quality and degree of a child's motoric movement. Children's activity level has been described in terms of the "tempo" and "vigor" of their physical movement (Buss & Plomin, 1984) and has also been linked to their tendency to seek out experiences that are exciting and stimulating (Rothbart

& Ahadi, 1994). According to the temperament model of Rothbart and Derryberry (1981), higher activity levels are the result of high physiological reactivity. Together with positive emotionality, high approach, and low shyness, activity level is situated in the broader "reactive" temperament dimension of surgency, also referred to as "exuberance." Research that isolates activity level from the other surgent traits has linked it to children's externalizing difficulties (i.e., fighting, aggression) but usually only when moderated by other factors such as low approach (Teglasi & Meshbesher, 2004), low attention span (Caspi, Henry, McGee, Moffitt, & Silva, 1995), and negative emotionality (Rothbart & Ahadi, 1994; Rothbart & Bates, 1998).

A naturally high activity level might engender other problems for a child in a classroom. For instance, active children might be more prone to distraction or frustration by having to sit still for longer periods of time. In a study of first graders (Martin, Nagle, & Paget, 1983), activity and distractibility were linked to a reduction in a child's "constructive self-directed activity" and an increase in "gross-motor inappropriate behavior." Distractibility and persistence were also linked to "nonconstructive self-directed activity," such as a child playing with her hair, and "nonconstructive peer interaction" (Martin et al., 1983). Higher activity level and distractibility, when combined with lower persistence, are traits generally related to lower academic achievement for this age and grade (Martin, 1989).

However, a moderate, or even high, activity level can offer distinct benefits for preschool- and early elementary-age children. Results of studies looking at motor activity level in earlier grades, such as preschool, are mixed, and moderate motor activity at this age has been found to have cognitive benefits. Indeed, movement has a functional and meaningful role in young children's development: motoric activity provides feedback to the developing central nervous system and encourages prefrontal lobe functioning and inhibitory control (Campbell, Eaton, & McKeen, 2002). High activity level may also be associated with curiosity and motivation during the preschool years (Rudasill, Gallagher, & White, 2010). In fact, preschoolers with higher activity may display better academic achievement than their less active peers (Rudasill, Gallagher, & White, 2010), and children who displayed more physical movement may do better on certain tasks depending on the nature of the activity (Graziano, Jensen-Campbell, & Sullivan-Logan, 1998).

Nevertheless, teachers may view high activity as detrimental to student learning, given a common classroom expectation is for students to remain seated and quietly pay attention. Past research has placed low to moderate activity within the "temperamental profile" of a student that teachers view as the "most teachable." In studies by Keogh (1986, 1989), teachers reported that the "most teachable" students generally possessed high attention and persistence, lower negative emotionality, and low to moderate activity. This group of students has also been found to receive more positive attention from teachers than their "less teachable" counterparts (Pullis, 1989). Indeed, when given a hypothetical teaching situation or anecdote, teachers are more likely to nominate active and distractible children to be "removed" from class than less active children (Martin et al., 1983).

Activity level is most frequently associated with maladjustment when it is "undercontrolled" or unregulated. For example, hyperactivity, impulsivity, and inattention are the three traits associated with clinically diagnosed ADHD (Sánchez-Pérez & González-Salinas, 2013). Therefore, in order to achieve a full picture of a child's behavior, the importance of assessing activity level in concert with other traits cannot be overstated. Martel and Nigg (2006) propose, for example, that ADHD is not necessarily a diagnosis for children who are simply very active, but rather children who concurrently struggle with both emotional and physical impulsivity. In addition, Chhabildas, Pennington, and Willcutt (2001) view lack of attention, rather than hyperactivity, as the driver of ADHD symptomology.

In terms of school readiness, activity-level assessments may also yield differential results, depending on a child's gender. Although children's activity levels do decrease with age (Eaton & Yu, 1989), it has been well-documented that boys are more physically active than girls during the school-age years, preferring more vigorous activities from preschool through adolescence than girls (even though this may be due to socialization effects) (Birns & Sternglanz, 1983; Eaton & Enns, 1986; McClowry, Halverson, & Sanson, 2003). And as higher activity is often correlated with greater distractibility, boys may be seen by their teachers as less focused and attentive as compared with girls (Serbin, Zelkowitz, Doyle, Gold, & Wheaton, 1990).

In short, high activity level provides both advantages and disadvantages for children, depending on other factors such as the intensity and timing of a child's activity, the teacher's attitudes toward the activity, and the child's ability to *self-regulate* activity as appropriate. These factors present a meaningful point of contact for intervention or adaptation to encourage student success. Thus, parents and teachers would be wise to consider how they can foster positive alignment of children's activity levels with expectations and seek to improve regulation of that activity when necessary.

Exuberance

Some children are more extraverted than others; in terms of temperament, they exhibit a higher activity level, a greater positive affect, and a stronger tendency to approach novel or high-intensity experiences as compared to their peers (Berdan et al., 2008; Derryberry & Rothbart, 1997). Such extraverted, or "surgent," children are generally less shy and show greater sociability (Fox, Henderson, Rubin, Calkins, & Schmidt, 2001; Rothbart et al., 2001). In temperament literature, the term "surgency" refers to a cluster of traits combining extraversion, high positive affectivity, high approach, and low shyness. Such children are often referred to as having "positive emotionality" or, more frequently, "exuberance" (Fox et al., 2001; Putnam & Stifter, 2005).

According to Derryberry and Rothbart (1997), exuberant children are highly sensitive to rewards and are thus often highly engaged with their environment as they

seek out those rewards. In fact, all previous terms for exuberance (surgency, positive emotionality, extraversion) are used to describe children who actively seek out rewarding stimuli in their environments. Exuberance therefore may confer children multiple benefits in social situations. Positive affect, for example, boosts mood and protects against worry (Lonigan, Phillips, & Hooe, 2003), a focus on goal/reward attainment fosters persistence (Carver, 2004; Dennis, 2006), and positive emotionality encourages social skill-building (Garner & Waajid, 2012; Rydell, Berlin, & Bohlin, 2003, 2007). Indeed, temperamental exuberance, which shows stability across situations (Fox, Henderson, Marshall, Nichols, & Ghera, 2005) and throughout the school-age years (Caspi et al., 2003), is generally linked to increasing social competence as children develop (Fox et al., 2001; Hane, Fox, Henderson, & Marshall, 2008; Rydell et al., 2007).

However, while a moderate level of exuberance promotes positive adaptation, highly exuberant children may be at risk for maladjustment (Berdan et al., 2008; Eisenberg et al., 2001) if their strong approach tendencies enable too much impulsivity without regulation (Eisenberg et al., 2005; Eisenberg & Morris, 2002). In contrast to more inhibited peers, exuberant children may be especially prone to frustration or anger when a reward is blocked (Carver & Harmon-Jones, 2009). Due to their increased focus on social exploration and decreased inhibition, highly exuberant children may also be less focused on following "the rules" or paying close attention to their own behavior (Berdan et al., 2008; Dennis, 2006; Putnam & Stifter, 2005; Rydell et al., 2003). Thus, exuberant children, despite their many positive qualities, may need additional assistance regulating their strong approach tendencies (Polak-Toste & Gunnar, 2006; Stifter, Putnam, & Jahromi, 2008).

Not surprisingly, very high exuberance and low regulation have been linked to externalizing problems in children, both concurrently and longitudinally (Kim, Walden, Harris, Karrass, & Catron, 2007). Eisenberg et al. (2001) found that children aged 4–8 years with high anger/frustration levels and low-effortful control were at risk for social maladjustment. Furthermore, highly exuberant children may be disliked by other children if their interaction style becomes too overbearing (Berdan et al., 2008; Coie, Dodge, & Kupersmidt, 1990; Rubin, Coplan, Fox, & Calkins, 1995). When their goals are not met, preschool children with such "high approach" may resort to relationally or physically aggressive strategies such as yelling or hitting (Gunnar, Sebanc, Tout, Donzella, & van Dulmen, 2003; Rubin et al., 1995). Tarullo and colleagues (2011) found that highly exuberant children in preschool classrooms tend to display more dominance, anger, and conflict in their friendships. Without intervention, social isolation, although rare, may become a problem for highly exuberant children at school (Coie et al., 1990).

Thus, a positive classroom or peer environment is especially important in protecting exuberant children from maladjustment, as they are likely to be motivated by social rewards. In preschool, according to one study, the peer group may offer "remedial support" for these children in terms of socialization and redirection (Berdan et al., 2008). Indeed, the positive emotionality and reward-seeking nature of exuberant children also mean that they are likely to self-regulate their impulses based on social feedback from both adults and peers because positive feedback is a

reward for them. Indeed, their risk for developing externalizing problems may diminish to the extent that these children can develop strong social motivations for self-regulating (Rubin et al., 1995).

Emotionally, exuberant children have a tendency toward anger, rather than sadness, but this tendency may have additional self-regulatory benefits. He, Xu, and Degnan (2012) note that anger, more so than sadness, is frequently accompanied by problem-solving behaviors. Further research has shown that anger can be adaptive for young children as it is associated with them taking more action during a problem-solving task (Dennis, Cole, Wiggins, & Cohen, 2009). In pursuit of a highly desired goal, anger may increase children's motivation to try different goal-attainment strategies, thereby fostering the development of persistence (Carver & Harmon-Jones, 2009; He et al., 2012). The approach-oriented nature of exuberance might also help children with emotional control. Dennis, Hong, and Solomon (2010) reported that exuberant preschool children who attempted a disappointing task showed stable, high levels of emotional regulation regardless of their level of effortful control.

Therefore, although exuberance is often a beneficial trait for a child to possess, it also has the potential to manifest in externalizing behavior problems or social deficits. Parents and teachers must seek to monitor exuberant children and help those children learn to regulate where appropriate, ensuring these children have access to rewards before they try to seek them out themselves. In doing so, exuberant students may engage in disruptive behaviors which can negatively impact the learning of the rest of their classrooms.

Adaptability

A comparatively underexplored temperamental dimension in the school readiness literature is that of adaptability. *Adaptability* represents the extent to which a child perceives an environmental change to be stressful and responds appropriately to that change (Thomas & Chess, 1977). However, while the temperament traits outlined thus far represent the child's initial reactions to environmental stimuli (e.g., the predisposition to withdraw when called on in class), adaptability is reflective of their longer-term response to changes (e.g., the tendency that a child will experience difficulties fitting in with a new classroom). Given the considerable changes associated with transitioning into kindergarten, it therefore stands to reason that low adaptability should be considered as a risk factor when preparing for that transition. Indeed, teachers rate students with low adaptability as having the poorest adjustment to kindergarten (Slee, 1986). Other indicators of academic success have also been linked to adaptability, including social adjustment and performance on problem-solving tasks (Carey, Fox, & McDevitt, 1977) and reading and math skills (Martin & Holbrook, 1985). Adaptability has also been included as a trait of "teachable" students (Keogh, 1994), a perception which, as previously mentioned, influences teacher interactions with children (Sanson, Hemphill, & Smart, 2004). Teacher ratings of academic skills can be largely explained by the teacher's

perception of children's persistence and adaptability (Guerin & Gottfried, 1994). Low adaptability ratings predict increased anxiety, peer rejection, disruptive behaviors, and poor academic performance (Grant, Bagnell, Chambers, & Stewart, 2009; Martin et al., 1983; Maziade et al., 1990; Walker, 2001). It appears that success in the classroom is, in large part, dependent upon the individual's ability to adapt to changes within the classroom.

Adaptability is a particularly stable dimension of temperament; a meta-analytic review of longitudinal studies of temperament showed adaptability to be the most consistent across the lifespan (Roberts & DelVecchio, 2000). However, the deleterious effects of less adaptable temperaments appear to be ameliorated by the emotional climate of classrooms. That is, low adaptability is only associated with poor academic and social outcomes in classrooms where teachers do not consistently provide emotional support to their students (Brock & Curby, 2016). This provides further evidence of the importance of goodness-of-fit between temperament and the environment: although a stable trait, low adaptability is by no means a life sentence to poor outcomes. However, when there is not good fit, particular temperamental traits can be quite damaging. Similar to shy children, children with lower adaptability are much less likely to initiate interactions in their classroom (Martin et al., 1983), and less adaptable children are more likely to spend classroom time observing others rather than engaging in educational activities (Gersten, 1989).

Effortful Control

Whereas initial models of temperament focused on children's individual differences in their reactions to the environment (Thomas & Chess, 1977), later psychometric analyses of children's behavior revealed an additional, regulatory, dimension of temperament: effortful control (Rothbart & Bates, 2006). This factor comprises temperamental traits that facilitate the regulation of individuals' reactive tendencies captured in earlier models of temperament. Note that the name of the construct, "*effortful* control," explicitly suggests that the child's regulation is *purposeful* rather than *involuntary* (Eisenberg et al., 2013). To illustrate this point, consider the shy children discussed earlier in this chapter. Whereas shy children may wish to engage with peers and teachers in their classrooms, they experience internal barriers from reactions to their environment (e.g., discomfort, anxiety) that lead to involuntary hesitation overriding their desire to participate. That is, their temperamental tendency is to be inhibited, regardless of their motivation to behave otherwise (Kagan, 2012). In contrast, regulated children (i.e., those exhibiting effortful control) are able to adjust their responses to their environment appropriately (Eisenberg et al., 2013). This regulation may manifest in the purposeful activation of a non-preferred response (e.g., a shy child raising their hand despite feeling anxious) or in the purposeful inhibition of a preferred response (e.g., an exuberant child resisting

shouting out the answer before being called upon). As such, the development of effortful control has powerful implications for a child's readiness during the transition into school, where expectations for monitoring and regulating behavior are greater than ever before in the child's life (e.g., increased demands that students remain in their seats for teacher instructions).

There is a robust literature examining how effortful control relates to school readiness. Students who enter kindergarten with high levels of effortful control finish the school year ahead of low-effortful control students in academics, such as math, vocabulary, and emergent literacy (e.g., Ponitz, McClelland, Matthews, & Morrison, 2009). Children's self-regulation demonstrates significant growth during the preschool and kindergarten years, and that growth appears to be facilitated in part by the demands placed upon students as they are expected to monitor and manage their own behavior and attention throughout the school day (Bronson, 2001). Researchers exploring developmental trajectories of self-regulation have found that students' rates of growth in effortful control are also powerful predictors of later social relationships, above and beyond initial levels of effortful control (Vazsonyi & Huang, 2010).

Children's effortful control has also been correlated with academic skills, such as literacy and math in preschool (McClelland, Cameron, Wanless, & Murray, 2007), and preschool self-regulation predicts reading achievement in kindergarten (Howse, Calkins, Anastopoulos, Keane, & Shelton, 2003). More developed effortful control predicts preschoolers' academic readiness and adjustment, and growth in effortful control during the preschool year may help low-income students overcome their risk of unsuccessful transitions (Lengua et al., 2015). Indeed, well-developed effortful control has been identified as an indicator of school readiness (Blair, 2002), as successful students must regulate their behaviors and follow directions (Lin, Lawrence, & Gorrell, 2003) and eventually complete homework on their own (Ramdass & Zimmerman, 2011). Difficulties adjusting to the expectations to regulate their own behaviors, especially following directions, are a common weakness among incoming kindergarteners, according to their teachers (Rimm-Kaufman, Pianta, & Cox, 2000).

Consistent with other temperamental traits, the effects of effortful control on adjustment do not operate within a vacuum. For example, kindergartners' adjustment appears to be affected by interactions between student's and teacher's effortful control, such that greatest adjustment is found for students whose effortful control level (i.e., high or low) matches or "fits" that of their teachers (Gaias, Abry, Swanson, & Fabes, 2015). Poorly regulated students, for example, experience the most conflictual relationships with their teachers when their teachers are highly regulated (Gaias et al., 2015). In the sections that follow, we explore teacher-child relationships and interventions targeting classroom quality and how these facilitate goodness-of-fit to promote successful kindergarten transitions.

Promoting Goodness-of-Fit During the Transition to Kindergarten

Teacher-child relationships have been consistently shown to be important for children's outcomes (e.g., Davis, 2003; Hamre & Pianta, 2001; Hughes & Kwok, 2007). When teacher-child relationships are positive (i.e., based on trust and mutual respect), they serve as sources of support for children and promote positive academic, behavioral, and socioemotional outcomes (Hughes & Kwok, 2007; Hughes, Luo, Kwok, & Loyd, 2008; Pianta, 1999; Rudasill, Reio, Stipanovic, & Taylor, 2010), particularly for children at risk for academic difficulties (Hamre & Pianta, 2001). On the other hand, negative teacher-child relationships, marked by high levels of conflict, are associated with poor outcomes for children. So, we must ask: What predicts the quality of the teacher-child relationship?

Research suggests that certain temperament traits predispose children to different types of relationships with their teachers (Rudasill et al., 2006; Rudasill & Rimm-Kaufman, 2009; Rydell, Bohlin, & Thorell, 2005). Certain temperament traits indicative of low regulation and high reactivity present more difficulties for parents and teachers. Children with this combination of temperament traits are likely to have problems forming positive relationships with teachers and more conflict with teachers in elementary grades (Rudasill, Niehaus, Buhs, & White, 2013). Shyness, anger, and effortful control have also been linked to teacher-child relationship. Anger is positively related to conflict (Justice, Cottone, Mashburn, & Rimm-Kaufman, 2008), effortful control is negatively related to conflict and positively related to closeness (Rudasill & Rimm-Kaufman, 2009), and shyness is negatively related to both conflict and closeness (Rudasill & Rimm-Kaufman, 2009; Rydell et al., 2005). Some research suggests that children's temperament impacts the frequency of interactions teachers have with their students that, in turn, affects the quality of the teacher-child relationship (Rudasill & Rimm-Kaufman, 2009). Specifically, children's shyness and effortful control predict the frequency of teacher- and child-initiated interactions in first-grade classrooms. More shyness predicts fewer child-initiated interactions, and less effortful control predicts more teacher- and child-initiated interactions which, in turn, predicts less closeness and more conflict, respectively (Rudasill, 2011; Rudasill & Rimm-Kaufman, 2009).

Research suggests that children with more aversive temperament traits may be buffered by positive teacher-child relationships. Griggs, Gagnon, Huelsman, Kidder-Ashley, and Ballard (2009) found that temperamentally difficult preschool children with high-quality relationships with their teachers had better peer interactions during play compared to similar children with poor student-teacher relationships. With a sample of first graders, Arbeau, Coplan, and Weeks (2010) showed that positive teacher-child relationship quality buffered shy children from displaying anxious or asocial behavior. In a longitudinal study, Pluess and Belsky (2009) found that, for children who had been identified as temperamentally difficult in infancy, low-quality care in preschool predicted more problematic behavior in kindergarten, whereas high-quality preschool care predicted less problematic behavior in kindergarten, compared to children identified as temperamentally easy in infancy.

Therefore, for certain temperaments, successful transitions into kindergarten may be contingent upon classroom-level changes to promote positive teacher-child relationships and higher quality of care. There are numerous interventions that have been implemented in classrooms to enhance both the relationships and interactions that children have with their teachers, as well as classroom quality in general. Each of these interventions targets unique aspects of the classroom environment and the risk factors that come with certain types of temperaments, ultimately aiming to improve the "fit" between temperament and classrooms.

One well-known intervention is *INSIGHTS* (O'Connor, Cappella, McCormick, & McClowry, 2014a). This temperament-based intervention is used in early elementary grades and teaches parents, children, and teachers about temperament in order to foster the social, emotional, and behavioral development of children. Teachers, parents, and children learn about different types of temperament through the use of puppets and vignettes. For example, one puppet "Coretta the Cautious" is shy. Teachers and parents are taught about what it means to be shy and how to support shy children effectively through watching Coretta in a variety of different situations. The other puppets include Fredrico the Friendly, Gregory the Grumpy, and Hilary the Hard Worker.

O'Connor et al. (2014a) found that the *INSIGHTS* intervention enhanced the critical thinking and math skills of shy children over the transition between kindergarten and first grade. Children enrolled in *INSIGHTS* also experienced significantly faster growth in math and reading achievement, as well as increased sustained attention, than children who were enrolled in a supplemental reading program (O'Connor, Cappella, McCormick, & McClowry, 2014b). *INSIGHTS* has also demonstrated effectiveness in reducing disruptive and off-task behaviors among children with "high maintenance" (i.e., difficult) temperaments (McCormick, O'Connor, Cappella, & McClowry, 2015). First-grade classrooms that used *INSIGHTS* had higher teacher practices of classroom organization and lower class-wide off-task behaviors over the course of the school year (Cappella et al., 2015). From this we can gather that by teaching teachers to be aware of different temperaments as well as effective strategies for working with children's individual temperaments, we can increase children's achievement and make the classroom a more comfortable and inviting place for both teachers and students.

Banking Time is another classroom intervention which makes use of one-on-one time between the teacher and a specific child in the classroom. During these meetings, the child chooses an activity for both parties to engage in. The teacher is responsible during these meetings for observing the child's action, narrating what the child is doing aloud, labeling the child's feelings, and conveying supporting messages to the child in order to enhance the teacher-child relationship (Driscoll & Pianta, 2010). After the intervention, research has shown that teachers reported more perceptions of closeness with children who participated in *Banking Time* than with children who did not. Additionally, teachers reported increases in children's frustration tolerance, task orientation, and competence. Teacher reports also indicated decreases in children's conduct problems for those in the *Banking Time* condition when compared with peers in the control condition. A mutual understanding between the teacher and child is extremely important for the overall quality of

the teacher-child relationship. *Banking Time* seems to have a significant positive impact on the teacher-child relationship and academic functioning (Driscoll & Pianta, 2010) and externalizing behavior problems (Williford et al., 2017).

Williford et al.'s (2017) randomized controlled trial compared *Banking Time's* impact on preschoolers' externalizing behavior problems against two conditions: business-as-usual or an unstructured "child time" condition where teachers were instructed to spend individual time with the target child but received no additional directions. Both *Banking Time* and child time conditions improved child behavior and positive interactions with teachers compared to business-as-usual, suggesting that increasing individual time between student and teacher can positively affect child behavior. However, only the *Banking Time* condition reduced the number of negative interactions between teachers and children. The authors suggested that *Banking Time's* emphasis on unconditional acceptance of the child allows both parties to gain experience in nondirective and positive interactions and helps foster a more positive classroom environment. This intervention therefore provides temperamentally sensitive opportunities for individual children to improve their interactions with their classroom environments.

Summary

In conclusion, decades of temperament research have promoted our understanding of individual differences in children's reactivity to internal and external stimuli and the regulation of those reactions. Recent efforts to explore the implications of temperament have revealed that these characteristics may facilitate or impede the transition into kindergarten. However, the strengths and weaknesses of a given dimension of temperament are contingent upon the environmental context surrounding the student. This chapter's purpose is to challenge educators to consider how their practice affords "fit" for children varying across five temperamental dimensions (shyness, activity, exuberance, adaptability, and effortful control) and how those variations impact children's likelihood of a successful transition to kindergarten. Finally, an exploration of evidence-based interventions that emphasize good fit provides a first step toward ensuring successful transitions for *all* students, regardless of their predisposed traits.

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Part III
Supporting Children's Development During the Kindergarten Transition

Transition Practices into Kindergarten and the Barriers Teachers Encounter

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Abstract A child's transition to Kindergarten is a critical time to establish a positive school trajectory. This chapter presents results from a survey of 484 Kindergarten teachers across the United States who reported on their transition practices and the barriers to using those practices. Results indicated teachers' primary strategies for transition involved communicating to the parents of the entire class by way of newsletters, by emails, or by hosting open houses. Teachers viewed parents and school structures as key barriers to implementing transition practices.

From the beginning of their school careers, children are expected to know more than ever before, making the transition to Kindergarten more difficult than it has been in the past. In fact, what was once taught in first grade is now regularly taught in Kindergarten (Bassok, Latham, & Rorem, 2016). State standards, such as the Common Core, have academic benchmarks that start in Kindergarten (Common Core State Standards Initiative, 2010). However, even though what was once taught in first grade is now taught in Kindergarten, what was once taught in Kindergarten is not necessarily taught to children in preschool.

Although preschool has also become more academic, not all preschools offer high-quality programs, nor do all children attend preschool. This has put schools and Kindergarten teachers in a challenging position. Because children are entering Kindergarten with varied readiness levels, teachers have to differentiate instruction much more while still working to assist all children to meet (higher) grade-level standards. This means that some children need to learn more than 1 year's worth of material. Thus, as more is expected of Kindergarten children, a greater emphasis is placed on providing the supports children need for a successful transition to Kindergarten.

The transition to Kindergarten is thought to be particularly important compared to transitions into other grade levels (Cook & Coley, 2017). Evidence suggests that children's academic school trajectories are set quite early – by second grade (Alexander & Entwisle, 1988), making it even more critical to promote school success at the start of their school careers. Children's early school successes can set the stage for further growth (Duncan et al., 2007) and are positively linked to myriad academic and behavioral outcomes, while children who struggle in Kindergarten may not have all the skills that they need as they progress in school (Cook & Coley, 2017; Li-Grining, Votruba-Drzal, Maldonado-Carreño, & Hass, 2010; LoCasale-Crouch, Mashburn, Downer, & Pianta, 2008; Razza, Martin, & Brooks-Gunn, 2015). Furthermore, children who struggle may develop diminished motivation to work in school (Anderman & Anderman, 2013) setting the stage for low school performance in the near term and other problems in school (e.g., dropout) in the longer term.

The transition practices that schools and teachers use may help set the stage for positive child outcomes. Transition practices are the practices teachers and schools typically undertake to reach out to children and families prior to, during, or just after the transition to Kindergarten. There is evidence that part of Kindergarten success is associated with the ease of transition (Cook & Coley, 2017; Schulting, Malone, & Dodge, 2005). Fundamentally, these practices are meant to ease children's entry into formal schooling, quickly develop skills children may not have, and help children prepare for the new demands that will be placed on them.

We wondered about the extent to which teachers and schools are engaging in various Kindergarten transition practices to help children establish a positive trajectory from the start of school. Teachers and schools may also face barriers in implementing transition practices, be they technological or due to a lack of opportunity (La Paro, Kraft-Sayre, & Pianta, 2003). We sought to develop a better understanding of these issues by asking Kindergarten teachers about the practices they use, for whom they use the practices, and their perceived barriers to implementation. This chapter reports the results of a survey conducted by the Coalition for Psychology in Schools and Education of the American Psychological Association about the transition practices used by nearly 500 US Kindergarten teachers.

School Readiness

Transition practices can be seen as promoting school readiness. School readiness refers to a broad set of skills – academic, social, and emotional – that allow children to thrive in school. In general, these prerequisite skills are used as building blocks for other, more sophisticated, skills that are emphasized in school. Measures of readiness have consistently been predictive of academic and social outcomes at the end of Kindergarten (Stormont, Herman, Reinke, King, & Owens, 2015). Thus, transition practices that can promote these academic, social, and emotional skills may help set children on a better trajectory than they would otherwise experience.

Academic skills at Kindergarten entry typically refer to those skills that are needed for early reading and mathematics, although other academic domains are also included. For example, pre-reading skills may refer to knowing the names and sounds of letters of the alphabet and knowing how text is arranged in a book. If children master these elements, then teachers can focus on teaching children to read. Similarly, pre-mathematics skills focus on children knowing the numerals and what they represent, as well as cardinality (i.e., the last number counted is how many objects there are), and being able to determine what numbers come before, between, and after other numbers. If children learn these elements, teachers can focus on teaching other mathematical operations, such as addition and subtraction.

Many Kindergarten programs also focus on children's social–emotional learning (SEL). According to the Collaborative for Academic, Social, and Emotional Learning (CASEL), SEL has five core components including: self-awareness, self-management, responsible decision-making, relationship skills, and social awareness (http://www.casel.org/what-is-sel/). In general, these skills allow children to understand their own and others' emotional states and to engage in prosocial interactions (Denham et al., 2003, 2014). When these skills are used throughout the day in a classroom, it can make a substantial difference in how children engage in learning tasks, especially when other children are involved (Denham, 2006). In this way, social–emotional skills are also helpful in promoting academic skills (Curby, Brown, Bassett, & Denham, 2015; Denham, Brown, & Domitrovich, 2010). Given this association, and the fact that Kindergarten

teachers may be less comfortable teaching academic content (Jarrett, 1999), it is not surprising that social–emotional skills have been prioritized over academic skills by teachers at Kindergarten entry (Curby et al., 2017; Rimm-Kaufman, Pianta, & Cox, 2000), although teachers do increasingly want children to arrive at Kindergarten with academic skills, such as already having begun to read, compared to earlier cohorts of teachers (Bassok et al., 2016).

Differences in Children's Readiness for Kindergarten

Children arrive at school remarkably different from one another in terms of their skills and abilities. These differences may, in part, be due to variations in the nature and forms of their preschool experiences. Children may have experienced parental care, home-based childcare, daycare, or more formal center-based pre-Kindergarten experiences. Each one of these early childcare settings has advantages and disadvantages, particularly when the quality of these programs is considered (National Institute of Child Health and Human Development Early Child Care Research Network & Duncan, 2003). Parental care, home-based childcare, and daycare may not have regular schedules, and children may not have opportunities to engage in activities with same-aged peers. Pre-Kindergarten is usually reserved for children who are entering Kindergarten the next year and tends to have an academic component. Some Pre-Kindergarten programs are housed in elementary schools. However, many, but not all, new Kindergarteners may be attending school for the first time. Thus, transition practices may be more important for some children than others. Teachers need to be able to identify children's needs quickly based on their educational background and supplement instruction for those who have no prior experience.

There are other characteristics that are beyond the bounds of schools and schooling and reflect the children's home environment or biology. These characteristics, such as socioeconomic status, may have a profound impact on children's readiness for school. Several of these characteristics (temperament, socioeconomic status, and special needs status) that affect transitions are discussed in more detail elsewhere in this book, and the reader is referred to those other chapters for an in-depth discussion. Nonetheless, several home and child characteristics are briefly described below.

Enriched Home Environment An enriched environment can have a profound influence on brain development (Kempermann, Kuhn, & Gage, 1997). Some children may have an enriched, cognitively stimulating home environment, while others may have an environment that provides little exposure to novel, cognitively demanding experiences, with fewer opportunities to learn. An enriched home environment (Bradley et al., 1989) provides opportunities to learn skills that will be helpful in school.

Attachment Parent–child attachment describes the extent to which children seek comfort and support from a parent. Generally, children who form a secure attachment are more willing to explore their environment. Along with the enriched environment, Bernier, Beauchamp, Carlson, and Lalonde (2015) found that children who were securely attached to their mothers in toddlerhood had better executive functioning skills (working memory, attention, cognitive flexibility) as well as better teacher reports of task performance at school entry.

Parental Control of Child Behavior Some children may come from environments that place many demands and limits on their behavior (Baumrind 1966). Other children may come from homes with few demands and limits. Based on these varying experiences in the home, children will enter the classroom with different expectations about how to engage with other children and adults. Children who come from permissive environments may struggle in a classroom in which they are permitted few choices and in which their behavior is monitored and, potentially, reprimanded. For example, a child who is not required to share at home may have conflicts with children and teachers if sharing is expected in the classroom. Fundamentally, these home-based differences in upbringing provide children with differing levels of social–emotional skills (Eisenberg, Cumberland, & Spinrad, 1998), which shape how they engage in classroom tasks.

Temperament Another factor associated with differences in how children transition is their biologically based temperament. Temperament provides a behavioral baseline for the way in which children interact with others and their environment over time (Henderson & Wachs, 2007). There are a variety of temperamental factors recognizable to parents in infancy (Thomas & Chess, 1977). Although malleable, temperament plays a role in the early childhood classroom and the ways in which children might face a transition. For example, a less-adaptable, behaviorally inhibited child may have more difficulty starting at a new school, with unfamiliar classmates and teachers, whereas an exuberant, approach-oriented child might relish the novelty.

Sociodemographic Characteristics Research suggests that children from low socioeconomic backgrounds – particularly those who have not attended high-quality preschool – are often not as ready for Kindergarten as their more affluent peers (Jarrett & Coba-Rodriguez, 2015; Lee & Burkam, 2002). Language is one area where sociodemographic differences are evident in school readiness. There can be large differences in the amount of language exposure children of differing socioeconomic levels have prior to age 3. On average, evidence suggests that children in families on welfare hear 30 million fewer words than children from professional families over the first 4 years of life (Hart & Risley, 2003). Furthermore, because families with similar sociodemographic characteristics tend to cluster in neighborhoods, many local schools may have concentrations of disadvantaged children (Cook & Coley, 2017).

Children with Special Needs Many children enter Kindergarten with diagnosed disabilities – which can include developmental, cognitive, language-related, psychological, physical, or emotional difficulties. Another group of children are on a trajectory that will ultimately result in a diagnosis, but have not yet been identified. These children have particular, and sometimes acute, needs that may hinder their school readiness – although high-quality preschool can mitigate some of these problems (Yoshikawa et al., 2013). As such, the transition to school may be particularly challenging for children with special needs, and, therefore, these children may disproportionately benefit from transition practices.

Variability in Transition Practices

Schools and teachers engage in transition practices to help children prepare for and adjust to Kindergarten with a variety of goals. Transition practices may help meet informational, instructional, or relational goals. Informational approaches are primarily designed to have one-way information flow from the school or classroom to the parents. These approaches are frequently less expensive than other transition practices but tend to be low-intensity. Instructional approaches are designed to directly promote Kindergarten readiness skills, such as providing access to a website or app that teaches these skills, which would require relatively few resources, or a summer preparatory program, which might require many resources. Relational transition approaches focus on promoting positive relationships across the transition (Rimm-Kaufman & Pianta, 2000). Any transition practice can operate through multiple means, but some approaches are weighted toward meeting one goal. For example, a newsletter will be more informational, whereas a home visit will be more relational.

Transition practices vary greatly from school to school and classroom to classroom. Some of these practices may involve more effort and expense but may also be more engaging. For example, a Kindergarten teacher may visit a child's home, allowing for the teacher to learn about the needs of the incoming child before school starts. Other practices are potentially easier to implement, such as sending out an informational newsletter to the families of incoming children. There are a variety of other practices that schools and teachers can employ, such as accessing school records, meeting with preschool teachers of the incoming children, and holding open houses.

Schools generally do not use just one transition practice. Instead, they can develop an entire system of transition practices that a given child would experience (Berlin, Dunning, & Dodge, 2011; Cook & Coley, 2017; LoCasale-Crouch et al., 2008; Schulting et al., 2005). For example, a child could visit the Kindergarten classroom as a preschooler, and the family could receive information during the summer. Or a child might attend an instructional summer program, and the teacher might visit the child's home before the start of school. Combined, these experiences may make for a potent combination in promoting school readiness.

Schulting et al. (2005) found that children who received transition services prior to Kindergarten entry also had higher achievement scores at the end of Kindergarten. LoCasale-Crouch et al. (2008) found that preschool children who received more transition services, generally, and whose preschool teachers talked with their Kindergarten teachers, specifically, were rated by their Kindergarten teachers as being more socially competent and having few problem behaviors. Bierman, Welsh, Heinrichs, Nix, and Mathis (2015) found that children in Head Start who received home visits targeted toward parent training and math skills acquisition saw improvements in academic achievement in Kindergarten compared to similar peers who only received mail-home math games. Cook and Coley (2016) found that specific transition practices, such as parent orientations, were linked to increased achievement in reading and math.

Universal, Targeted, and Indicated Transition Practices

Transition practices can be thought of as primary prevention strategies with different supports available to some children and other strategies available to all children. At the lowest intensity level, transition practices can be universal. This means that all children entering Kindergarten would receive the same transition practice. For example, although somewhat impersonal, newsletters and open houses provide efficient opportunities for the whole class to get information about the classroom and school.

At a higher intensity level, targeted transition practices can be used for children who are considered to be at risk of not being ready for Kindergarten. For example, children who attend Head Start (and therefore are from low-income families) may be provided extra supports at the transition to Kindergarten. The targeted transition practices may include such activities as having the eligible children visit the Kindergarten classroom (Early, Pianta, Taylor, & Cox, 2001), allowing them to establish relationships with the Kindergarten teacher, and promoting more continuity in the children's classroom experiences over the transition period (Rimm-Kaufman & Pianta, 2000).

Lastly, high-intensity transition practices can be used for children who are not simply at risk for difficulties but have indicated in some way that they are likely to have a challenging transition and, therefore, have the highest level of need. For example, children who have demonstrated behavior problems may benefit from a transition program specifically supporting the teacher–child relationship (Eisenhower, Baker, & Taylor, 2016), or a child identified as needing special education services may benefit from school personnel talking with the child's parents (Daley, Munk, & Carlson, 2011). Other high-intensity practices might include a visit to the child's home before the start of school or conversations between the preschool and Kindergarten teachers about the child.

Barriers to Using Transition Practices

Despite the positive effects of transition practices, there is variation in their implementation. Some of this variation may be attributable to the barriers teachers and schools may encounter during implementation. Decision-making processes about what transition practices to use are often based more on school or teacher resource constraints (money and time) than what might be most effective or best for (individual) children. Class lists generated too late may preclude sending a newsletter before the start of school. Or, teachers may not be paid to do transition work prior to the start of school. In addition, some practices may require training for implementation or best be used in conjunction with training, which is rarely available (Early, Pianta, & Cox, 1999). For example, teachers are likely to need to work with school personnel in order to have a meeting with preschool staff and be able to use information from that meeting effectively.

Notably, families and children from low socioeconomic backgrounds are less likely to receive transition services. This is despite the aforementioned factors, which make these children most likely to need such services (Cook & Coley, 2017; LoCasale-Crouch et al., 2008). Further, schools in impoverished communities tend to engage in fewer targeted transition practices.

Additionally, the effects of successful transition practices on academic achievement are often mediated by parent involvement (Schulting et al., 2005). Studies have found that when given the opportunity to engage in transition practices, parents are willing and excited to participate, but there are many barriers that may prevent parent involvement such as work schedules and transportation (La Paro et al., 2003). If teachers understand the barriers parents face, they may have lower expectations for parents to be involved. Alternatively, if teachers do not understand the barriers parents face, they may believe that parental noninvolvement is due to not caring about education/Kindergarten. Regardless, teachers may simply not believe it is worth the effort to engage with the parents about the child's transition, given what they perceive parents will (or will not) do with the information (La Paro et al., 2003).

The Present Study

Recent trends in education may have influenced the need for and shape of transition practices. More academic content is expected in the early years, more teacher accountability exists for academic performance, and the public is faced with reports of increases in the rates of Kindergarten suspensions and expulsions. Given the changing backdrop of education, we wanted to explore the current use of transition practices into Kindergarten.

The present study presents results from a national survey of Kindergarten teachers in the United States. The instrument itself was adapted from a previous survey

of Kindergarten teachers conducted by the National Center for Early Development and Learning (1996). Readers are referred to Pianta, Cox, Taylor, and Early (1999), Early et al. (1999), as well as Early et al. (2001) for results of this earlier survey.

The new instrument was modified to update the language and, in some cases, to expand the scope of key items. Generally, the survey asked about characteristics of children, the teacher, classroom, and school as well as teachers' perceptions of school readiness skills and transition practices. The survey was conducted by the American Psychological Association's Coalition for Psychology in Schools and Education (http://www.apa.org/ed/schools/coalition/), a group of psychologists who meet regularly to address issues at the intersection of psychology and education.

In May of 2015, three waves of emails were sent to 10,000 randomly selected Kindergarten teachers. The email distribution list was purchased from Market Data Retrieval, an agency that maintains a list of emails of Kindergarten teachers in the United States. The unsolicited email asked teachers to participate in the survey for a chance to win one of 40 Amazon gift cards worth $25 each. The teachers clicked a link in the survey that took them to the survey hosted on Qualtrics. About 2000 teachers opened the email, and about 530 provided information in the survey. For our purposes, 484 Kindergarten teachers provided information on the transition practices they use for their classroom. Limited demographic information was collected in the survey, but of the teachers in our sample, 97% were female; the modal age group was 45–54 years old (n = 160); and teachers averaged 18 years teaching overall and 11.5 years teaching Kindergarten.

Survey Results

Our first question asked which practices teachers used as their students transitioned into Kindergarten. All teachers reported using at least one transition practice. As shown in Table 1, the most commonly reported transition practices used for the whole class were sending a newsletter/email to the children's parents after school starts and hosting an open house either before or after the beginning of the school year. Notably, the list of transition practices was not exhaustive, and several teachers mentioned other transition practices that were not pre-listed, such as Parent Teacher Association-sponsored playground meet-ups, which may be important in helping children engage with other children and families interact with one another.

Although less common than universal transition practices, the most commonly reported targeted transition practices was reviewing written records of children's past experience or status. The next most commonly used targeted transition practice was having preschool teachers bring the next year's children to visit the classroom. Few teachers conducted home visits for incoming children.

A follow-up item on the questionnaire was asked to determine if there were barriers (yes/no) to using each of the transition practices endorsed. Ninety-five percent of teachers who reported on their transition practices reported that there was at least

Table 1 Reported use of various transition practices as well as the degree to which teachers perceived barriers to using those practices

	Use of transition practice				Barriers to using this practice		
Question	*n*	Did not use	Used for certain children	Used for the whole class	*n*	Yes	No
A visit to the children's home before school starts	474	94%	4%	2%	403	69%	31%
A visit to the children's home after school starts	474	93%	6%	1%	397	66%	34%
Regular meetings among school, early childhood, and preschool staff in community	475	61%	17%	21%	396	55%	45%
Preschool teacher(s) brought next year's children to my classroom	478	57%	25%	18%	402	43%	57%
Informational website on child performance or classroom activities	477	53%	5%	41%	397	48%	52%
A newsletter/email to the children's parents before school starts	481	29%	4%	68%	417	30%	70%
Written records of children's past experience or status were made available to me and I read them	467	21%	50%	29%	441	45%	55%
An open house for parents and children after school starts	481	17%	1%	81%	411	26%	74%
An open house for parents and children before school starts	482	16%	3%	82%	420	31%	69%
A newsletter/email to the children's parents after school starts	482	7%	3%	89%	421	19%	81%

one barrier to using those transition practices. The majority of teachers indicated that there were barriers to visiting a child's home either before or after school started or having regular meetings with preschool staff. Teachers reported the fewest barriers to sending a newsletter or holding an open house after school started.

Finally, we asked teachers what the barriers were to using transition practices generally. As shown in Table 2, results indicated that the majority of teachers viewed parents' beliefs and behaviors as barriers to transitioning children to Kindergarten. (Four of the top five items related to families.) The top-ranked items included "parents underestimate the importance of Kindergarten," "parents do not bring their child in for registration or open house," and "parents' lack of access to technology." This suggests that teachers strongly implicate parents in their decisions not to utilize certain transition practices. These results are unfortunate given that research has found that parental involvement is a cornerstone to success of the transition into Kindergarten (Puccioni, 2015).

Teachers also frequently selected items that indicated structural features of how schools were run could hinder the use of transition practices. For example, the second most endorsed item was "Class lists are generated too late." Few teachers saw

Table 2 Percent of teachers reporting a given barrier to using transition practices

Barrier to using transition practices	% Endorsed
Parents underestimate the importance of Kindergarten	66%
Class lists are generated too late	57%
Parents do not bring their child in for registration or open house	55%
Parents' lack of access to technology	49%
Children are not present in school (frequent tardiness or absenteeism)	45%
A transition practices plan is not available in school/district	42%
There is a language barrier with the parent	39%
Requires work in summer that is not supported by salary	35%
Child's housing situation is unstable	34%
I could not reach most parents of children who need these practices	34%
Resources are not available (e.g., funds, website)	32%
Parents cannot read letters, etc., sent home	30%
It is dangerous to visit children's homes	30%
The school or district does not support	28%
It takes too much time to conduct these practices	19%
Contacts with parents are discouraged prior to the start of school	11%
Concern about creating negative expectations	9%
Others? Please describe	9%
I choose not to do it	8%

themselves as a barrier by indicating "I choose not to do it" suggesting that they would engage in transition practices if barriers were removed. Some teachers chose "Other" when selecting barriers to implementing transition practices. Although some of their responses recapitulated their checkbox selection (e.g., class lists generated too late), there were several novel responses, including frequent transitions due to being on a military base, the late registration of children for Kindergarten, unresponsive parents, the multiple languages spoken by parents and the associated lack of translation support, being discouraged to do these practices by other teachers, undocumented parents not wanting contact with school officials, too many children, and changing teaching assignments.

Teachers were also asked if they had received training in transition practices. Approximately 24% of teachers reported receiving such training. We wondered if training in transition practices was related to using particular practices. Using chi-square analyses, we looked for differences between using a certain practice (yes/no) and training (yes/no). Results indicated that receiving training was significantly related to having children visit the Kindergarten classroom. Training was also related to having regular meetings among school, early childhood, and preschool staff in the community.

Summary and Conclusions

This chapter presented results from a national survey of Kindergarten teachers' transition practices. Three important findings emerged from the results. First, teachers tended to use universal transition practices, which allowed for efficient use of their time but may limit the supports and connections derived from individually targeted practices. Second, teachers view parents' beliefs and behaviors as well as school structures as barriers to using transition practices. Third, training may be necessary for teachers to use particular transition practices.

Prominence of Whole-Class Transition Practices

The most frequently reported transition practices had two common elements: They were focused primarily on providing information and were directed at the whole class (e.g., newsletters and open houses). Teachers and schools likely used these universal transition practices as a more efficient use of their time than more individualized approaches. This is consistent with prior work showing that transition practices that were time intensive (Early et al., 2001) or involved in-person contact were least likely to be used (Pianta et al., 1999). Although the practices that were likely to be used for the whole class may not be particularly potent in terms of promoting children's skills, they are likely to be helpful in setting the stage for families to engage in Kindergarten, particularly if they take place before school starts. However, it is notable that teachers reported favoring practices that would best be utilized by highly engaged parents, while also viewing parents' beliefs and behaviors as barriers to overcome.

Less time-efficient methods, such as reviewing individual files of children, were reserved for targeted or indicated groups of children. This may be appropriate given that certain children may have higher needs for transition activities than others. These transition practices likely only focus on children from just a handful of backgrounds, such as those who receive special education services, those that do not attend a pre-Kindergarten program attached to the school, or those that are English language learners. However, these characteristics are just a few of the factors that can make it challenging for a child to transition into Kindergarten. Other factors, such as being very shy, can potentially make the transition to school daunting. A very shy child might benefit greatly by going to the school individually for a visit over the summer. Schools should consider ways to meet the transition needs of children based on a variety of family and child characteristics.

Teachers View Parents and School Structures as Barriers to Using Transition Practices

Interestingly, teachers viewed external factors, such as the parents or the schools, as the main barriers to using transition practices. These potential misperceptions may mask the fact that language barriers prevent parents from being able to read a newsletter or show up for a parent–teacher conference. Two-thirds of children who are English language learners (and presumably have parents who are also not proficient at English) live in poverty (Capps et al., 2005). Therefore, children who might benefit the most from the use of transition practices may be least likely to find commonly used transition practices accessible (e.g., information newsletters and open houses).

To the extent that the barriers are real, and not simply a misperception, there are some potential ways to mitigate the challenges associated with these home-based barriers. For example, being mindful of when transition events are and whether the child or siblings can come may make the difference for a single parent who is deciding whether or not to attend. When sending information home, it is important to consider whether the medium (e.g., letter vs. email) can be accessed by families that don't have access to technology. What languages are being used in communications as well as having access to translators may influence whether a family will be engaged in the transition. Parents may be more involved, not only when some of these barriers are addressed but also when they see the school trying to address the barriers in some way.

School policies and practices can also be barriers to the use of transition practices. Not compensating teachers to do transition activities (prior to the start of school) communicates that transition activities are either beyond the scope of a teacher's job or not a priority. Other barriers may be easier to overcome for the school or district. For example, many schools and districts do not have a transition plan (that teachers are aware of). Establishing a set of guidelines (or communicating about existing guidelines to teachers) would help to prioritize transition activities. Other school- or district-based barriers may be technical – such as having class lists generated too late, which has been a long-standing problem (Early et al., 2001). If there were an established transition plan and teachers not only had the class list but knew what to do with the list (which may require training) and were compensated to do so, then overcoming the challenges to generate a class list prior to the start of school may enable even more or better transition activities.

Training May Be Necessary for Teachers to Use Particular Transition Practices

Lastly, there are general practices that most teachers engage in regardless of what training they have received (e.g., holding open houses, sending out newsletters after school starts). However, teachers with some training in school transitions tended to

utilize transition practices that engaged children directly or were more time intensive, such as having preschool children visit the Kindergarten teacher and holding regular meetings in the community with school, early childhood, and preschool staff about what to expect from the Kindergarten curriculum and experience. These targeted practices have been shown to be more effective with the populations who might benefit the most from transition activities, suggesting that trainings and investment in the Kindergarten transition may be worthwhile (LoCasale-Crouch et al., 2008). Interestingly, this is consistent with the work of Early et al. (1999) – using the prior version of the instrument our study used – who found that teachers lacked specific training in effective transition practices.

Conclusion

Despite the importance of starting school well, many effective transition practices are simply not being used at many schools. If schools were to enhance resources available to support more use of these effective transition practices, children might be more ready to learn at Kindergarten entry. Combined with effective classroom teaching and management, the effective use of transition practices may help children establish a better academic trajectory that, in some cases, may avoid remediation and lead to academic achievement. This result would benefit children, teachers, and schools alike.

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Transition Practices and Children's Development During Kindergarten: The Role of Close Teacher-Child Relationships

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Abstract Children's early school success is critical, and evidence suggests that when kindergarten teachers provide more transition practices as children prepare to enter kindergarten, they show improved outcomes in kindergarten. Positive teacher-child relationships may be a link between transition practices and children's school success. Here we examine whether teacher-child closeness mediates between kindergarten teachers' use of transition practices and children's academic and social growth during kindergarten. Data for this study came from the National Center for Early Development and Learning's (NCEDL) Multi-State Study of Pre-Kindergarten. Children from 240 pre-K classrooms from six states were followed from pre-K to kindergarten. For this study, 730 children were included and were ethnically diverse: 40% White, 24% Black/African-American, and 26% Latinx. Three main findings emerged: (1) teacher-child closeness was predictive of children's growth in multiple academic and behavioral outcomes in kindergarten; (2) transition practices were positively related to teachers' perceptions of closeness with children in kindergarten; and (3) teacher-child closeness mediated the association between transition practices and children's academic and behavioral outcomes. Implications are discussed.

Children's early school success is consistently linked to favorable long-term outcomes (e.g., Jordan, Kaplan, Ramineni, & Locuniak, 2009; Locuniak & Jordan, 2008; Vitaro, Brendgen, Larose, & Tremblay, 2005). Investments in preschool to improve children's potential to do well seem to matter initially, especially for children most at risk for school difficulties, but effects diminish with time, even as

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early as kindergarten (Lipsey, Hofer, Dong, Farran, & Bilbrey, 2013; Magnuson, Ruhm, & Waldfogel, 2007). Reynolds, Magnuson, and Ou (2008) suggested that gains made in preschool might be sustained when kindergarten environments are of high quality and well aligned with the preschool environments.

Preschool to kindergarten transition practices are a way to promote the alignment of environments through the provision of familiar routines, expectations, and activities. The examples of such activities include holding a kindergarten orientation for children and their families on what to expect in kindergarten, having children visit their new classroom and teacher prior to the start of school, or inviting kindergarten teachers to visit preschool classrooms. Previous research suggests that these kinds of effective transition experiences from preschool to kindergarten benefit children academically and socially (LoCasale-Crouch, Mashburn, Downer, & Pianta, 2008; Schulting, Malone, & Dodge, 2005), resulting in learning skills needed to succeed in school (Heckman & Masterov, 2007; Magnuson et al., 2007).

Although practices used to promote effective transitions are associated with positive child outcomes (LoCasale-Crouch et al., 2008; Schulting et al., 2005), the pathways through which transition experiences lead to benefits for children are unclear. One possible link between transition practices and children's school success might be the positive relationship between children and their new teachers, which have been established as an important factor for both children's short- and long-term academic and social outcomes (Hamre & Pianta, 2001; O'Connor & McCartney, 2007). Thus, we examine whether teacher-child closeness mediates the association between kindergarten teachers' use of transition practices and children's academic and social growth over the kindergarten year.

Kindergarten as a Critical Period for Children's School Success

Some theorists have suggested that kindergarten serves a "critical" period for children's school success (e.g., Entwisle, 1995; Rimm-Kaufman & Pianta, 2000) and a number of empirical studies support this. For example, multiple studies show children's kindergarten proficiency in reading and mathematics predicts academic success in later grades (Jordan et al., 2009; Locuniak & Jordan, 2008; Morris, Bloodgood, & Perney, 2003; Schatschneider, Fletcher, Francis, Carlson, & Foorman, 2004). In addition, children's social skills in kindergarten relate to the long-term positive outcomes such as high school completion (Vitaro et al., 2005).

Many children, however, have trouble during the transition to kindergarten. For example, Rimm-Kaufman, Pianta, and Cox (2000) found that among a nationally representative sample of kindergarten teachers, nearly half of teachers reported half of their class or more exhibited adjustment problems such as difficulties following directions, inadequate academic performance, and trouble working independently. Among these, approximately one-sixth of children displayed even more serious adjustment problems (Rimm-Kaufman et al., 2000). Additionally, struggles at kin-

dergarten entry are more pronounced for children living in poverty (Halle et al., 2009). Growth trajectory analyses suggest that children who are behind academically or socially in early grades are at a distinct disadvantage in later grades than their counterparts (McClelland, Acock, & Morrison, 2006) and are at risk for adjustment problems (Hamre & Pianta, 2001).

Conceptualizing an Effective Transition to Kindergarten

Although some have conceptualized school readiness as a set of prerequisite skills that a child possesses upon entry to kindergarten, scholars such as and Ramey and Ramey (1999) considered this view inadequate because of its disproportionate focus on children's skills. Recent school readiness models employ an ecological approach to account for the dynamic contexts in which children are situated and the amount of support they receive in terms of positive teacher-child relationships (Downer, Driscoll, & Pianta, 2006; Mashburn & Pianta, 2006). The most effective transition practices are those that foster connections between systems, for instance, connections between children and kindergarten teachers, particularly prior to kindergarten entry, between preschool and kindergarten teachers, and between teachers and families (Rimm-Kaufman et al., 2000). Recognizing that child, family, and school factors are interconnected and interdependent, Rimm-Kaufman and colleagues (2000) contend that adults need to work to align experiences during the transition period in ways that promote children's successful adjustment to kindergarten.

Transition Practices Associated with Kindergarten Success

When children experience the described transition practices, better adaptation to kindergarten occurs, especially for those at social and economic risk (LoCasale-Crouch et al., 2008; Schulting et al., 2005). For example, as a part of the 1986 Head Start national transition initiative to implement 15 comprehensive programs, Hubbell and colleagues (1987) found that children who experienced more transition activities (based on teacher report) were better adjusted at the beginning of school in terms of self-confidence, liking of school, overall happiness, and reduced stress. Schulting et al. (2005), controlling for family socioeconomic status, found that the number of transition activities implemented at the beginning of kindergarten predicted children's academic gains and family involvement across the kindergarten year, especially for children in low-income families. These findings suggested that providing a smooth transition experience may have a moderating role between poverty and child outcomes. Similarly, LoCasale-Crouch et al. (2008) found that transition practices initiated prior to kindergarten were associated with teacher-reported high levels of children's school readiness, especially among children from low-income families.

Although evidence suggests that the use of transition activities is associated with beneficial child outcomes, the processes through which they work are unclear. There seems to be at least two potential pathways through which transition activities and child outcomes are related. First, transition activities promote aligned environments and experiences between preschool and kindergarten, providing continuity conducive to children's successful adjustment and continued learning (Bogard & Takanishi, 2005; Kagan & Kauerz, 2007). Studies have shown that activities that foster alignment, such as preschool and kindergarten teacher collaboration and alignment of curricula and support services, are particularly important for beneficial transition outcomes (Ahtola et al., 2011; LoCasale-Crouch et al., 2008). This evidence suggests that children who experience a consistent and stable learning environment across settings reap long-term benefits including positive cognitive, social, and academic outcomes (Reynolds & Temple, 1998). In other words, transition activities are effective when they are part of a systematic effort to align standards, curricula, and assessments between preschool and kindergarten settings (Bogard & Takanishi, 2005; LoCasale-Crouch et al., 2008).

A second potential pathway by which transition practices support children's school success is through enhanced and early development of relationships with kindergarten teachers (Hamre & Pianta, 2001; Jerome & Pianta, 2008; Rimm-Kaufman & Pianta, 2000). Teacher-child relationships are an important element of children's school experience, and close relations have been attributed to supportive functions such as facilitating positive affect and attitude toward school, fostering communication with teachers allowing for greater involvement in the classroom, and forming a secure base to explore the classroom environment (Birch & Ladd, 1997). Similarly, positive relationships have been shown to serve as a protective mechanism for a child's social and academic development providing a foundation on which later behaviors can be modeled (Baker, 2006; Birch & Ladd, 1997; Pianta, La Paro, Payne, Cox, & Bradley, 2002). This study will examine whether close relationships may be the mechanism through which transition practices improve children's academic and social development.

Teacher-Child Relationships and Children's School Success

Ample research shows that close teacher-child relationships are a strong predictor of both short- and long-term academic and social outcomes from early childhood through adolescence (Ladd & Burgess, 2001; O'Connor & McCartney, 2007). Closeness refers to relationships that are warm, contain open communication, display positive affect between student and teacher, and exhibit comfort in the student's ability to approach the teacher (Pianta, Steinberg, & Rollins, 1995; Sabol & Pianta, 2012). Children with close relationships with their teachers demonstrate higher academic performance, better social skills, and fewer instances of externalizing behaviors (Ladd & Burgess, 2001). For example, Pianta and Stuhlman (2004) reported that teacher-child closeness was consistently associated with children's improved social and academic skills in preschool, kindergarten, and first grade. In

another study, pre-K children showed more gains in academic and social skills when they experienced closer teacher-child relationships (Howes et al., 2008). Further, Graziano, Garb, Ros, Hart, and Garcia (2016) recently found that teacher-child closeness during preschool was predictive of teacher-reported kindergarten readiness and lower academic impairment (Graziano et al., 2016).

Evidence suggests that teacher-child relationship quality remains relatively stable across the elementary school years (O'Connor, 2010; Rudasill, 2011). According to, consistency in teacher-child relationship quality also predicts children's social and academic development beyond early schooling. O'Connor and McCartney (2007) found associations between the quality of teacher-child relationships from preschool through third grade and children's third grade academic achievement. Similarly, in a longitudinal study of children in kindergarten through fifth grade, Maldonado-Carreño and Votruba-Drzal (2011) found that teacher-child relationship closeness was stable across elementary grades and that increases in teacher-child relationship closeness were associated with improvements in teacher-reported academic skills and reductions in behavior problems. Furthermore, evidence suggests that high-quality teacher-child relationships are protective for children at risk for school failure. For example, early childhood teachers' reports of their relationships with individual children were related to future referrals for special education (Pianta et al., 1995), behavioral problems in elementary school (Hamre & Pianta, 2001), peer relationships (Birch & Ladd, 1997), and achievement (Burchinal, Peisner-Feinberg, Pianta, & Howes, 2002).

McCormick, O'Connor, Cappella, and McClowry (2013) found a positive link between kindergarten teacher-child closeness and first-grade math and reading achievement among low-income, racial/ethnic minority students attending urban schools. Interestingly, Gini, Sagi-Schwartz, Mark, and Aviezer (2014) found that teachers' perceptions of their relationships with first-grade students were related to their evaluations of student's academic performance, which were, in turn, related to student's perceptions of their (a) overall school experience, (b) academic abilities, (c) academic effort, and (d) quality of their relationships with their teachers. Additional research showed that teacher-child relationship quality in kindergarten predicted children's concurrent academic competence, which, in turn, predicted academic competence during first grade (Portilla, Ballard, Adler, Boyce, & Obradovic, 2014) and second grade. As such, research suggests positive kindergarten teacher-child relationships are important and salient contributors to child school success beyond the kindergarten year.

The Current Study

Given evidence that teacher-child relationship closeness is a unique predictor of academic and social outcomes and the use of transition and alignment practices that foster connections are also associated with such outcomes, it seems reasonable that teacher-child closeness is a mechanism by which transition activities are related to children's social and academic development during kindergarten. In this study, we

examine the pathway linking transition activities to child outcomes through teacher-child closeness. We hypothesized that the predictive power of transition practices to children's academic and social development in kindergarten is mediated by the teacher-child relationship closeness fostered by those practices.

Method

Participants

Data for this study came from the National Center for Early Development and Learning's (NCEDL) Multi-State Study of Pre-Kindergarten. During the 2001–2002 school year, NCEDL selected 240 pre-K classrooms from six states, including 960 children, who were followed from pre-K to kindergarten. The six states selected for participation in this study were among states that had committed significant resources to pre-K initiatives and that served at least 15% of their 4-year-old children in state-funded pre-K programs. One classroom in each center/school was selected at random for participation in this study, and from each class, four children were randomly selected from all eligible children in selected classrooms. For purposes of this study, one child per kindergarten classroom was randomly selected for inclusion in this study, resulting in 730 children who went to unique or independent kindergarten classrooms from those of their pre-K peers.

The sample included a diverse group of children and classrooms. Slightly less than half of the children (40%) are identified as European American, and approximately one quarter of the sample are identified as either Hispanic/Latino (26%) or African-American (24%). More than half of the sample (57%) came from families that were poor, defined as those having an annual family income less than or equal to 150% of the federal poverty guidelines for the given family's size. Almost one quarter of the classrooms were short-day programs, and the child-adult ratio was 8 is to 1. For kindergarten teachers, nearly the entire sample (96%) reported possessing a BA and a credential to teach kindergarten children. Kindergarten teachers averaged nearly 8 years of experience teaching their current grade, with a range of 0–47 years of experience.

Measures

Kindergarten Transition Practices A list of common and/or known supportive transition activities was included as part of kindergarten teacher survey, which was modified from a previous NCEDL kindergarten transition study. Teachers reported at the beginning of the school year whether or not they engaged in specific practices to support children's successful transition to kindergarten. Activities were limited to those that required an actual connection between the teacher and child/family before school started and included (1) phone calls to children or families, (2) visits by

incoming kindergartners to my class, (3) visits to children or families at home by me or other kindergarten staff, (4) a spring orientation about kindergarten for children, (5) a spring orientation about kindergarten for parents, (6) an individual meeting with parent(s), and (7) an open house for parents and children. Teachers' responses were summed to create a seven-item transition activity composite index (*Mean* = 2.63, *SD* = 1.71).

Teacher-Child Closeness Teachers completed the Student-Teacher Relationship Scale (STRS; (Pianta, 2001), a widely used scale assessing teacher perceptions of the quality of their relationships with specific students that yields closeness and conflict scores. The STRS predicts academic and social functioning in prekindergarten through the elementary grades (Hamre & Pianta, 2001). In the current study, only closeness scale from the STRS was completed for the study child as an indicator of the teacher-child relationship quality. Scores ranged from 1 to 5, with 5 indicating higher ratings. On average, teachers rated their relationships with study child as close (*M* = 4.25, *SD* = 0.66).

Early Academic Skills The Woodcock-Johnson-III Psychoeducational Battery (WJ-III; Woodcock, McGrew, & Mather, 2001) is a widely used, individually administered assessment battery that measures general cognitive abilities and achievement in individuals from age 2 through adulthood. Raw scores from the Letter-Word and Applied Problem subscales were used in this study. The Letter-Word Identification subscale assesses decoding aspect of reading by asking children to identify and pronounce isolated letters and words. Applied Problems subscale assesses children's mathematical reasoning, achievement, and knowledge. This validated measure has been widely used with children (e.g., LoCasale-Crouch et al., 2008).

The Academic Rating Scale (ARS; Perry & Meisels, 1996) measures teachers' perceptions of children's skills for math and language and literacy. It has been widely used and validated (e.g., Baker, Tichovolsky, Kupersmidt, Voegler-Lee, & Arnold, 2015). For the current study, the kindergarten teachers completed ARS during fall 2002 and spring 2003. Teachers rated a child's proficiency in nine skills such as speaking, listening, early reading and writing for language and literacy (nine items) and math skills (seven items) on 5-point rating scale (1 = not yet; 2 = beginning; 3 = in progress; 4 = intermediate; and 5 = proficient). Example item for the language and literacy subscale is "produces rhyming words," and for the Mathematical Thinking subscale is "shows an understanding of the relationships between quantities." The internal consistency (alpha) for the scales was >0.90.

Social Competence and Problem Behaviors Kindergarten teachers completed the Teacher-Child Rating Scale (Hightower, 1986), a widely used behavioral rating scale that reflects seven elements of social and emotional competencies on two broad scales of social competence and behavior problems. They used four scales for social competence and three scales for problem behaviors. Teachers rated the social competence of study children individually using a 5-point rating scale on how well statements described the child (1 = not at all; 2 = a little; 3 = moderately well; 4 = well; and 5 = very well). Example items of social competence subscale include

"participates in class discussions," "completes work," and "well-liked by classmates." Similarly, teachers rated behavior problems of children individually using a 5-point rating scale (1 = not a problem; 2 = mild; 3 = moderate; 4 = serious; and 5 = very serious problem). Example items of behavior problem include "disruptive in class," "anxious," and "difficulty following directions." For this instrument, authors report test-retest validity between 0.61 and 0.91 and internal consistency ranging from 0.85 to 0.95.

Teacher and Child Demographics The 730 kindergarten children and teachers participating in this study varied across a number of dimensions. During the fall, teachers and families of the selected children provided information on their demographics. Teachers were asked about the number of years of education they had attained, years of teaching experience, and their credentials or licenses in early childhood education. Families responded to questions about maternal education, child's ethnicity, and family income.

Classroom-Level Quality of Teacher-Child Interactions Teacher-child interactions were rated using the Classroom Assessment Scoring System-Pre-K-3 (CLASS; La Paro & Pianta, 2000). The CLASS is an observational assessment of teacher-child interactions in classroom settings. The CLASS predicts self-regulation, social outcomes, and growth in language and literacy skills (Howes et al., 2008; Rimm-Kaufman, Curby, Grimm, Nathanson, & Brock, 2009). Because of these correlations, the CLASS assessment was used as a control variable to separate quality classroom teaching strategies from student-teacher relationships as leading to student success.

The CLASS measures three broad domains of interactions among teachers and children: emotional support, classroom organization, and instructional support. Two of these domains, emotional support and instructional support, have been identified as possible moderators between children's risk and their academic and social success (Hamre & Pianta, 2005; Rudasill et al., 2016). The emotional support domain describes how a teacher supports the social and emotional functioning in the classroom. Some indications of an emotionally supportive classroom include a warm and accepting environment, a teachers' sensitivity to children's emotional cues, and multiple opportunities for children to make choices and take leadership roles (Pianta, La Paro, & Hamre, 2008). The instructional support domain assesses the ways in which teachers implement whichever curriculum they are using to effectively support cognitive and language development (Pianta et al., 2008). Instructional support is demonstrated in the classroom with scaffolding, questioning, and feedback exchanges between teachers and children (Pianta et al., 2008).

Within the three domains of the CLASS, nine dimensions of interactions were assessed using 7-point scales: (a) positive climate, (b) negative climate, (c) teacher sensitivity, (d) overcontrol (reversed), (e) behavior management, (f) productivity, (g) instructional learning formats, (h) concept development, and (i) quality of feedback. Each dimension is rated using 7-point scales with one or two indicating the classroom is low on that dimension and three, four, or five indicating that the classroom is in the mid-range and a six or seven indicating the classroom is high on that

dimension. Coders attended a 2-day CLASS training and had to pass the CLASS reliability test, which requires scoring five segments and demonstrating consistency with master codes (80% of codes within one of master code). They scored in four to six cycles with each cycle consisting of 20 min for observations and 10 min for scoring. Average scores of each dimension are determined across all cycles and composite scores given for each domain. Throughout the coding period, all coders attended weekly meetings that focused on assessing progress and reliability, as well as addressing issues of potential drift. As noted above, the negative climate score is reversed to maintain the higher scores indicating higher-quality classrooms.

During spring, the observer rated the kindergarten classroom and the teacher on nine dimensions every 30 min, throughout two observation days. Observation days lasted from the time children arrived until they started nap (in full-day programs) or left for the day (in half-day programs). As spring data collection began, data collectors' reliability on the CLASS was retested during a live visit to a classroom with a gold standard coder. Data collectors' mean weighted kappa was 0.73 on their final test. Ninety-three percent of data collectors' responses were within one scale-point of the gold standard's responses. This level of agreement was equal to or higher, on average, than that obtained in studies using these scales in kindergarten (Pianta et al., 2002). Each classroom's score is an average of its scores across two observation days.

Results

The primary aim was to test whether increases in kindergarten transition practices predict more teacher-child closeness which, in turn, leads to improvements in children's academic and social outcomes (Fig. 1). Descriptive statistics for the variables included in our models are presented in Table 1. As noted in the transition practices reported, teachers were most likely to have preschool children visit their kindergarten classroom in the spring (71%) and least likely to visit a child in their home before school starts (5%). The sample of children was from predominantly poor families evenly split between boys and girls. The sample of teachers was experienced in teaching kindergarten, and many had education beyond a bachelor's degree. On average, teachers reported engaging in a moderate amount of transition practices and reported feeling a relatively high degree of closeness with children. The children showed notable gains in the most of the assessed variables except for the Hightower problems score, which showed no change.

The partial correlations between the number of transition activities and the teacher's perceived closeness with a child for spring outcomes, after controlling for fall outcomes, are provided in Table 2. This provides basic bivariate relations between predictor variables and changes in child outcomes over the kindergarten year. We observed a weak relationship between the transition practices and growth in child outcomes but stronger relations between teacher closeness and growth in the outcomes. All of the significant correlations were in the expected direction, where more transition practices and greater closeness were associated with increases in positive outcomes and decreases in negative outcomes.

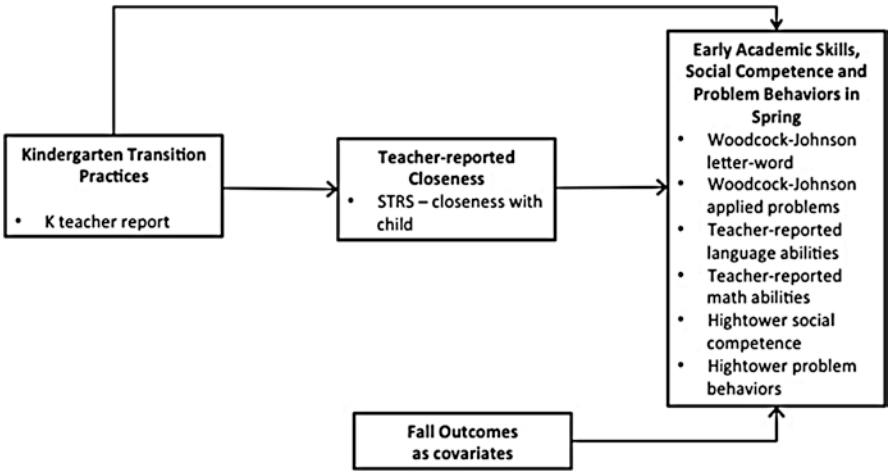

Fig. 1 Tested hypothesized effects of kindergarten transition practices on teacher-child closeness and children's early academic skills, social competence, and problem behaviors

Table 1 Descriptive statistics for kindergarten teacher transition practices, closeness, and children's early academic skills, social competence, and problem behaviors

Variable	Mean (SD)	Percent yes
Individual transition practices		
Phone call by a K teacher before school starts		26%
Visit by children to K before school starts		71%
K teacher visit to child's home		5%
K spring orientation for children		37%
K spring orientation for parents		42%
Individual meeting before school starts		26%
Open house before school starts		57%
Total transition practices	2.64 (1.71)	
Teacher-reported closeness	4.25 (0.66)	
Child gender (coded 0 = male, 1 = female)	0.51 (0.50)	
Teacher kindergarten years of experience	8.01 (7.46)	
Teacher CLASS pre-K-3 score	4.49 (0.54)	
Child outcomes	*Fall*	*Spring*
Early academic skills		
Letter-word	351.29 (25.98)	386.41 (27.33)
Applied problems	421.82 (16.73)	436.69 (15.45)
Language and literacy	2.40 (0.92)	3.67 (0.95)
Mathematical reasoning	2.39 (0.96)	3.68 (0.92)
Social competence and problem behaviors		
Social competence	3.38 (0.76)	3.47 (0.76)
Problem behaviors	1.65 (0.64)	1.64 (0.65)

Table 2 Partial correlations of kindergarten teacher transition practices, closeness, and children's early academic skills, social competence, and problem behaviors after controlling for fall

Outcomes	Transition practices	Teacher closeness
Early academic skills		
Letter-word	0.04	0.13**
Applied problems	−0.07	0.02
Language and literacy	0.08*	0.27***
Mathematical reasoning	0.09*	0.29***
Social competence and problem behaviors		
Social competence	0.05	0.26***
Problem behaviors	0.01	−0.21***

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Table 3 Standardized coefficients from the mediation model

Predictor		Mediator		Outcome	β (SE)	*P*
K transition practices	➔	Closeness			0.127 (0.034)	<0.001
		Closeness	➔	Letter-word	0.081 (0.027)	0.002
		Closeness	➔	Applied problems	0.004 (0.026)	0.87
		Closeness	➔	Language and literacy	0.200 (0.029)	<0.001
		Closeness	➔	Mathematical reasoning	0.235 (0.032)	<0.001
		Closeness	➔	Social competence	0.188 (0.026)	<0.001
		Closeness	➔	Problem behaviors	−0.148 (0.027)	<0.001
K transition practices	➔			Letter-word	0.008 (0.024)	0.73
K transition practices	➔			Applied problems	−0.055 (0.025)	0.03
K transition practices	➔			Language and literacy	0.526 (0.024)	0.61
K transition practices	➔			Mathematical reasoning	0.020 (0.032)	0.54
K transition practices	➔			Social competence	0.001 (0.025)	0.97
K transition practices	➔			Problem behaviors	0.037 (0.026)	0.17
Indirect effects						
K transition practices	➔	Closeness	➔	Letter-word	0.010 (0.004)	0.02
K transition practices	➔	Closeness	➔	Applied problems	0.001 (0.003)	0.87
K transition practices	➔	Closeness	➔	Language and literacy	0.025 (0.008)	0.001
K transition practices	➔	Closeness	➔	Mathematical reasoning	0.030 (0.009)	0.001
K transition practices	➔	Closeness	➔	Social competence	0.024 (0.007)	0.001
K transition practices	➔	Closeness	➔	Problem behaviors	−0.019 (0.006)	0.001

The standardized coefficients for the variables of theoretical interest in the mediation model are presented in Table 3. In each link of the model, we controlled for child gender, family poverty, mother's education, teacher's education, teacher's years of experience teaching kindergarten, and classroom quality. In addition, the paths predicting spring outcomes were also controlled for with the fall scores on those outcomes, so all models were predicting growth in outcomes. Results show several significant indirect effects, such that increases in transition activities or prac-

tices were associated with increased feelings of closeness, which in turn were associated with increased scores on the WJ-III Letter-Word test, higher ratings of language and math ability, higher scores on the social competency scale, and lower scores on the behavior problems scale. The mediated effect of transition practices on growth in children outcomes was significant in each case and in the expected direction, except for the WJ-III Applied Problems measure, in which case, teacher closeness was unrelated to the Applied Problems measure.

Discussion

In this chapter, our goal was to examine teacher-child closeness as the potential lynchpin between kindergarten transition practices and children's successful academic and social adjustment in kindergarten. Indeed, the evidence from this study suggests that transition practices are helpful for fostering positive relationships between teachers and children and these relationships facilitate positive outcomes for children's development during the transition to kindergarten. Specifically, three main findings emerged from our study. First, teacher-child closeness was predictive of children's growth in multiple academic and behavioral outcomes in kindergarten. Second, transition practices were positively related to teachers' perceptions of closeness with children in kindergarten. Third, teacher-child closeness mediated the association between transition practices and children's academic and behavioral outcomes. Each of these points will be discussed below.

First, commensurate with the results from multiple studies (Graziano et al., 2016; Ladd & Burgess, 2001; O'Connor & McCartney, 2007), in this study we found a positive link between teacher-child closeness and children's academic and behavioral outcomes in kindergarten ($\beta = 0.127$, $p < 0.001$). That teacher-child closeness may be particularly beneficial for children during the transition to kindergarten is helpful for targeting points of intervention and professional development. Certainly, teachers can be given specific skills to manifest close or positive relationships with children, as evidenced by interventions such as Banking Time (Driscoll & Pianta, 2010) and INSIGHTS (O'Connor, Cappella, McCormick, & McClowry, 2014). For example, the Banking Time intervention works by setting aside time for children and teachers to spend together building trust and rapport. INSIGHTS is an intervention designed to facilitate better understanding of teachers and children of the underlying reasons for children's behavior, thus fostering empathy and thoughtful interactions. High-quality transition practices should promote these same attributes by giving teachers opportunities to get to know their students before the kindergarten year begins. Likewise, rising kindergarteners can get acquainted with their new teachers and classrooms and feel welcomed and comfortable on the first day of the school year.

Banking Time and INSIGHTS have proven particularly effective for children at risk due to poverty or problem behavior (Hatfield & Williford, 2017; McCormick, O'Connor, Cappella, & McClowry, 2015; O'Connor et al., 2014). For example, Hatfield and Williford (2017) found that children with disruptive behavior showed

significantly lower levels of stress across the school morning when they were in Banking Time classrooms, compared to children in business-as-usual classrooms. Similarly, children with high-maintenance temperaments (negative emotions, low regulation) showed better behavior when they were in INSIGHTS classrooms (McCormick et al., 2015). These results from experimental studies of interventions designed to promote better understanding of children by teachers support the findings reported here and highlight the value of teacher-child closeness particularly for children who may be at risk for difficulty at the transition to kindergarten.

To that end, our findings also suggest that transition practices *promote* closeness between teachers and children. Significant associations ranged from $\beta = 0.081$ and $p < 0.02$ for WJ-III Letter-Word to $\beta = 0.235$ and $p < 0.001$ for ARS Math. Perhaps because many transition practices, such as visits to families before school starts and kindergarten orientation opportunities, increase familiarity and comfort between teachers and children, teachers find that children are more likely to use them as a secure base and a positive referent. Paired with the fact that teacher-child closeness was positively linked here and elsewhere (e.g., O'Connor & McCartney, 2007) with children's academic and behavioral outcomes in kindergarten, this is a critical finding, adding to evidence supporting the importance of transition practices for children's adjustment to kindergarten. Given the ample evidence pointing to the value of teacher-child closeness for children's positive academic and behavioral outcomes in early schooling (e.g., Graziano et al., 2016), transition practices increase in value when it becomes apparent that they also improve children's positive relationships with teachers in kindergarten.

It is important to note that children's outcomes were measured via standardized assessment and teacher report. The strongest associations between transition practices and children's academic and behavioral outcomes were based on teacher report; in fact, there was no association between transition practices and children's WJ-III Applied Problems performance, and the association with children's WJ-III Letter-Word performance was the weakest of the significant associations. What this suggests is that transition practices not only allow children to be more comfortable with teachers, developing a sense of security in the classroom that allows them to maximize their learning, but that transition practices also give teachers the opportunity to get to know their students better. Indeed, transition practices provide teachers with additional contexts, often without instructional pressure, to understand their young students and appreciate the interests, challenges, and gifts they may bring to kindergarten (O'Connor et al. 2014).

Finally, results from this study show that the mechanism by which kindergarten transition practices are related to children's success academically and behaviorally is the level of closeness in the teacher-child relationship. It appears that transition practices facilitate closer relationships between teachers and children in kindergarten and these, in turn, predict better academic and social outcomes for children at this transition time. However, evidence was not found for direct main effects for transition practices on academic outcomes for students. Although not an unexpected finding, it is edifying to see that transition practices facilitate connection between children and teachers and that this connection promotes positive outcomes at the start of the academic life span.

Strengths and Limitations

There are several strengths and limitations to the current study. In terms of strengths, first, this study unveils association between transition practices and children's academic and social outcomes that supply useful guidelines for pre-K and early elementary teachers to promote close relationships with children. Second, the sample was primarily made up of children from low-income families, and the current study highlights the role of effective transition practices to promote academic and behavioral adjustment among kindergarten children from economically disadvantaged families. Third, the use of multiple measures for children's academic outcomes allows for a better understanding of children's academic achievement.

The current study, however, also has several limitations. First, there was a lack of information about the contextual factors related to classroom, school, and home that could have affected children's transition from pre-K to kindergarten as well as school success. Parents or families were only included for demographic information. It would have added more value to the study results if parents' report on transition practices and children's outcomes were included in addition to teachers' report. Further, the study heavily relied on teacher reports for the constructs of transition practices, relationship quality, and children's outcomes in school. In addition, children's perceptions of their level of closeness with their kindergarten teachers and their reactions to the transition to kindergarten would have strengthened this study.

Despite these limitations, this study adds to the growing body of evidence of ways in which young children's early school success is supported by the people that work directly with them. Collectively, the work reported herein and in the extant literature points to the importance of early teacher-child closeness for children's positive adjustment at the start of elementary school. It is critical to note that kindergarten transition practices seem to foster close relationships between children and teachers at the formal educational entry point, driving home the value of kindergarten transition practices. Thus, administrators in elementary schools could work with kindergarten teachers to establish systems for transition practices, such as kindergarten camps and home visits, so that they are manageable and attractive and having the most impact.

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The Kids in Transition to School Program

Katherine C. Pears, Livia Carpenter, Hyoun K. Kim, Emily Peterson, and Philip A. Fisher

Abstract Because the period of transition at the beginning of kindergarten can potentially impact an individual's overall development, preventive intervention at the transition to kindergarten could have long-lasting and widespread impacts on the lives of children and their families. In this chapter, we present the Kids in Transition to School (KITS) Program, an evidence-based preventive intervention designed to capitalize on the period of the transition into kindergarten in preparing high-risk children for school. KITS features components for both children and parents. The program has specific foci on developing children's early academic, social, and self-regulation skills and increasing parents' school engagement and the use of positive parenting practices. KITS teachers and parent group facilitators are trained in evidence-based techniques important for teaching individuals new skills with a particular focus on teaching social–emotional skills. KITS has been tested in three randomized clinical trials. Results have demonstrated that the program positively affects children's academic and self-regulation skills as well as parents' use of consistent parenting techniques and school involvement. Effects of KITS have also been demonstrated at a neurobiological level. Finally, the effects of KITS appear to persist at least until the third grade, 4 years after the completion of the program.

The period of the kindergarten transition presents a unique opportunity for intervention. It is a time in which children are experiencing numerous and generally increased cognitive and behavioral expectations, as well as a variety of novel routines. For parents, it can also be a period of upheaval as they adjust to new routines and the prominence of nonfamilial adults and peers in their children's lives. As a number of

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researchers and developmental theorists have noted, the manner in which such critical transitions are completed can set an individual's overall development on either a positive or a negative trajectory (Cicchetti & Rogosch, 2002; Shonkoff & Phillips, 2000). Thus, preventive intervention at the transition to kindergarten could potentially have long-lasting and widespread impacts on the lives of children and their families.

Despite its critical importance, it is noteworthy that during the period just prior to the transition to school, there may be very few educational services available to incoming kindergarteners. Early education programs specifically focused on preparing children for school, such as Head Start and prekindergarten programs, usually do not offer summer services. This "summer services gap" is well-documented and is common not only to incoming kindergarteners but also to K–12 students in general (Alexander, Entwisle, & Olson, 2001). However, in the context of the transition to kindergarten, it could be particularly detrimental. Unlike children who have already entered formal schooling and thus may have received some preparation for the coming summer break by their teachers, incoming kindergarteners and their parents are in a "no man's land" during the summer before kindergarten as they are not yet a part of the K–12 system and may have already graduated from (or may have never been involved in) the prekindergarten system.

This lack of kindergarten preparation is particularly likely to affect children from low socioeconomic backgrounds or those who have experienced other types of early adversity such as maltreatment or high mobility/homelessness. Not only are they less likely to have received quality early learning experiences prior to the kindergarten transition than their more advantaged peers (Larson, Russ, Nelson, Olson, & Halfon, 2015), but these children are also less likely to be involved in summer programming (Alexander et al., 2001). Not surprisingly, these children subsequently have a higher risk for academic and social difficulties at school (Ackerman, Brown, & Izard, 2004; Fantuzzo, LeBoeuf, Chen, Rouse, & Culhane, 2012; Herbers et al., 2012; Scherr, 2007).

The Kids in Transition to School (KITS) Program is specifically designed to capitalize on the period of the transition into kindergarten in order to prepare high-risk children for school. KITS occurs over the course of 12–16 weeks during the summer before and into the fall of kindergarten. It focuses on the academic (e.g., literacy and numeracy) and social–emotional (e.g., prosocial and self-regulatory) skills that are critical to children's success in school and parenting techniques and skills that contribute to positive school experiences. This chapter outlines the program's foci, guiding principles, components, and findings from randomized clinical trials.

The KITS Program

Foci and Guiding Principles of the KITS Program

The KITS Program is based on the premise that children who begin school with the critical skills and the familial support necessary to succeed in kindergarten fare better across the K–12 years, are more likely to pursue and finish secondary

education, and demonstrate a number of positive outcomes in adulthood—including increased occupational and income attainment and decreased risk of psychosocial difficulties such as substance abuse (Duncan et al., 2007; Heckman, 2012; McClelland, Acock, Piccinin, Rhea, & Stallings, 2013; Reynolds, Temple, Ou, Arteaga, & White, 2011; Shonkoff & Levitt, 2010). This foundational premise is supported by the program's guiding principles: that efficacious interventions must be *developmentally timed* to occur at the critical transition to school, include a *focus on self-regulation skills* in addition to foci on early academic and prosocial skills, utilize *evidence-based teaching and behavior management techniques*, feature *parallel programming for both children and parents*, and provide *comprehensive training for providers* not only in the curriculum but also in teaching and behavioral management methods used to implement the curriculum.

Developmental Timing Because the move into formal schooling is such a critical period of transition, the KITS Program occurs during the summer before and the first 1–2 months of kindergarten. Pianta and Cox (1999) argue that this period is optimal for intervention for two reasons: (a) children are in the process of reorganizing their competencies and might be particularly open to influence and (b) this transition might set the trajectory of the child's later school career. Parents can also reorganize their skills and competencies at this time, given that this is a period of great change and growth for their children. Thus, they might be particularly open to aid and advice.

Focus on Self-Regulation Skills The KITS Program emphasizes self-regulation based on the recognition that, in addition to key early academic (e.g., numeracy and literacy) and prosocial (e.g., entering peer groups, sharing materials, cooperating, and maintaining social interactions) skills, self-regulation skills are essential for school success (Blair & Diamond, 2008). Self-regulation skills include children's abilities to voluntarily regulate emotions and behaviors in different situations to prevent themselves from disrupting academic performance and social relationships. Inhibitory control, an executive function that overlaps with self-regulation, involves voluntarily inhibiting prepotent attentional or behavioral responses (e.g., yelling out an answer in class) to perform a different response (e.g., raising one's hand before speaking).

Early exposure to stressors, such as low socioeconomic status or high mobility, is a consistent predictor of poor prekindergarten self-regulation skills (Rhoades, Greenberg, Lanza, & Blair, 2011). Furthermore, self-regulation is a key component of long-term competence and resilience, including better academic achievement and educational attainment (Casey et al., 2011; McClelland et al., 2013) and better social skills (Brock, Rimm-Kaufman, Nathanson, & Grimm, 2009; Graziano, Reavis, Keane, & Calkins, 2007; Howse, Calkins, Anastopoulos, Keane, & Shelton, 2003), as well as lower likelihoods of engaging in such risky behaviors as delinquency and substance use (Ayduk et al., 2000). However, many programs that address school readiness in children do not feature a focus on self-regulation (Welsh, Nix, Blair, Bierman, & Nelson, 2010).

Utilization of Evidence-Based Teaching and Classroom and Group Management Techniques In order to learn skills, individuals must be in an environment that capitalizes on their strengths rather than highlighting their deficits and that is free of distractions from the learning process. KITS teachers and parent group facilitators are trained in evidence-based techniques shown to be important for teaching individuals new skills. For example, teachers scaffold skill learning to the different levels of the children in the classroom, gradually withdrawing supports as children master the skills. Additionally, teachers preteach the behavioral expectations in the classroom and utilize a structured, consistent schedule to help children follow those expectations. This is reinforced by a high rate of proactive strategies to promote desired skills and behaviors—such as clearly labeling and praising appropriate behaviors, setting up group and individual contingencies for prosocial behaviors, and reinforcing children for appropriate behavior after noncompliance. They also utilize a number of techniques to discourage noncompliance and nonpreferred behaviors such as ignoring, distraction, and nonexclusionary time outs. Training in these techniques is crucial to the implementation of the program, mainly because research shows that teachers, particularly preschool teachers, often do not receive training in proactive classroom management strategies (Begeny & Martens, 2006; Freeman, Simonsen, Briere, & MacSuga-Gage, 2014; Hemmeter, Santos, & Ostrosky, 2008).

Parallel Programming for Children and Parents A growing literature links positive parenting practices—such as supportive, consistent discipline and monitoring—to better school readiness and school functioning (Downer & Pianta, 2006; Lunkenheimer et al., 2008; National Institute of Child Health and Human Development Early Child Care Research Network US, 2004). Furthermore, positive parenting can help children to attain high academic achievement even given other stressors such as multiple transitions (Kiernan & Mensah, 2011). A well-established research base also supports the positive effects of parent involvement with informal (e.g., storybook reading) and formal (e.g., teaching number names) early learning activities on subsequent educational outcomes, including predicting reading abilities from Grades 1 to 4 (Frijters, Barron, & Brunello, 2000; Sénéchal & LeFevre, 2002). Subsequent parental involvement in school is associated with such positive school outcomes as higher grades, better attitudes toward schoolwork, and greater educational attainment over time (Barnard, 2004; Christenson, 1999; Clements, Reynolds, & Hickey, 2004), and includes such activities as helping the child with school-related activities, talking to the child about school progress, communicating with teachers and other school personnel, and attending school events. Thus, promoting both positive parenting skills and involvement in school is essential to advancing children's positive school adjustment.

The KITS Program parent group curriculum (detailed below) focuses on both of these skill sets. Importantly, parents learn the same evidence-based teaching and discipline skills that the teachers use in the school readiness groups. This enhances the children's learning by promoting continuity across home and school environ-

ments. Whereas other early childhood programs feature a focus on parent involvement, they do not necessarily emphasize consistency in techniques used by teachers in the classroom and parents in the home. During the transition into school, establishing such consistency between the classroom and the home environment may be particularly important.

Comprehensive Training for Providers Researchers and developers of intervention programming for children (and others) are increasingly recognizing that providing interventionists with a written curriculum is not enough to ensure that providers (whether educators, mental health personnel, or medical providers) will use a program; effective implementation also requires direct training in the intervention (Dunst & Raab, 2010; Grol & Grimshaw, 2003). Evidence from the fields of education and mental health also suggests that the provision of coaching to individuals learning an intervention greatly enhances the likelihood that the new interventionists will implement the intervention with high fidelity and maintain that fidelity over time (Desimone & Pak, 2017; Dunst & Raab, 2010; Nadeem, Gleacher, & Beidas, 2013). The KITS Program employs a well-articulated, 40-h series of group training sessions with active participation of attendees separately for teachers and parent group facilitators with additional training for site supervisors. Additionally, KITS providers receive coaching as a team (teachers, parent group facilitators, and site supervisor) via a KITS staff member throughout at least the first two series of groups that they implement until they become certified KITS providers.

KITS Program Components

The KITS Program takes a two-generational approach to preparing children and their parents for kindergarten by addressing the components of school readiness discussed above. It features a 24-session school readiness group for children and a 12-session group for parents (or other primary caregivers). All sessions last 2 h. The first 16–20 sessions are delivered during 2 months of summer before the start of kindergarten, and the last 4–8 sessions are delivered in the first 1–2 months of school. Thus, the KITS Program follows the children and their families across the kindergarten transition.

School Readiness Group Structure and Curriculum Similar to a typical kindergarten schedule, the school readiness group sessions have a highly structured, consistent routine with many transitions between activities. Groups are held in center- or school-based classrooms. The manualized school readiness group curriculum covers three skill areas discussed above as being associated with later positive school outcomes: early academic (e.g., literacy and numeracy skills), prosocial (e.g., reciprocal social interaction, social problem solving, and emotion recognition), and self-regulatory skills (e.g., handling frustration and disappointment, controlling impulses, following multistep directions, listening, and making appropriate transitions). The curricular objectives are clearly specified for each session by skill

domain. Skills are introduced at circle-time lessons using a model-lead-practice format. The daily activities (e.g., art projects, dramatic activities) are designed to practice the session skills.

Five domains of early literacy are covered in the groups: language and understanding of narrative, concepts about print, phonological awareness, letter naming, and letter–sound knowledge. The early literacy activities include a letter of the day, a poem of the week, and storybook and dramatic activities. For the letter-of-the-day activities, children are introduced to a new letter of the day, the teachers help the children to produce the sound of the letter, and the children indicate whether a pictured object began with the letter and then produce their own words starting with the sound, thus reinforcing letter naming and letter–sound knowledge. A new letter is introduced during every session in the order in which they appear most commonly in the written English language (Carnine, Silbert, Kame'enui, & Tarver, 2004). Subsequent activities such as "I Spy," "Letter Sound Bingo," and art projects incorporate the letter of the day for more practice. The teachers and children also read a poem of the week together, with teachers asking children questions to reinforce concepts about print such as: "Where should I start to read?". To increase phonological awareness, teachers encourage children to find the words that rhyme. Children also search within the poem for instances of the letter of the day. Children engage with books and other print materials throughout the group sessions to further reinforce early literacy skills.

During the school readiness groups, children also have multiple opportunities to learn and practice early numeracy skills, including recognizing numerals, counting, grouping, more/less, and developing patterns. Teachers instruct and reinforce numeracy skills throughout the school readiness group by engaging in games, songs, and motor activities that require counting and number recognition skills. Teachers also provide practice opportunities by asking children to count and group materials, recognize patterns, and identify numerals.

Prosocial skills taught during the school readiness groups include sharing, making friends, joining games, and cooperating. These skills are introduced during the first circle time of each group and taught by teachers using clear, developmentally appropriate explanations. Teachers then model the prosocial skill by demonstrating examples and nonexamples and invite children to practice the skill with the group. Activities following this explicit instruction allow further practice of the skill. For example, during an exciting art activity, children will need to share materials within their small group.

Two components of self-regulation are taught in the school readiness groups: emotion regulation (e.g., managing feelings, handling disappointment, etc.) and behavior regulation (e.g., teacher preferred behaviors, work-related skills, etc.). Throughout the groups, self-regulation strategies are explicitly taught, modeled, practiced, and reinforced. As with the prosocial skills, regulation skills are introduced during the lesson component of group. Examples include problem solving, being a good sport, and handling disappointment. Teachers model the skill of the week and then provide structured activities and other opportunities to practice. Teachers also continually model behavior regulation skills such as sitting quietly

during instructional time, raising a hand before speaking, and transitioning appropriately between activities, while simultaneously providing children with a high rate of reinforcement for demonstrating positive behaviors. Opportunities for using inhibitory control, maintaining attentional focus, and practicing other regulatory skills such as handling disappointment are embedded across activities. Additionally, children make multiple transitions across activities (e.g., from circle time at the classroom rug to tabletop activities) and environments (e.g., from the classroom to the restrooms). Thus, they practice such skills as being able to finish an activity so that they can move on to another, moving quietly from one activity to another, and walking in line from one location to another.

During all of the sessions, the children receive high rates of encouragement, feedback, and guided practice in using the target skills. The school readiness groups accommodate up to 20 children. They are taught by three teachers—a lead and two assistants—who have specific roles defined in the curriculum.

Parent Group Structure and Curriculum KITS parent group meetings coincide with the children's school readiness group meeting times. Each group is led by a facilitator. A cofacilitator can be included if groups are particularly large—i.e., multiple children have multiple caregivers attending. The manualized curriculum includes foci on parent involvement in preparing for the transition to school (e.g., helping children to develop their early literacy skills, developing routines around school activities) as well as in their children's schooling after the start of the kindergarten and beyond (e.g., establishing homework routines, checking in with children about school, communicating with the child's teacher and other school personnel). The groups also include several sessions on parenting skills. These evidence-based behavior management techniques parallel those used in the school readiness groups and focus on such topics as giving clear, age-appropriate directions, positive reinforcement for appropriate behaviors, and techniques (such as time out) for discouraging inappropriate behaviors. The facilitator presents information, leads structured group discussions, facilitates parent-to-parent support, and addresses questions and concerns. Skill acquisition is reinforced via role plays and opportunities to practice new skills both during the group and through home-practice activities that are then reviewed at the next parent group session. Parent groups utilize clear and collaborative rules for conduct and encourage consistent parent discussion and involvement. A caregiver who misses a session receives a home visit (or a phone call) from the facilitator to cover the content and materials for that session. Supplemental materials to support the implementation of new skills include weekly homework assignments to complete together and weekly *Home–School Connection* newsletters outlining the school readiness group topics for a given week.

All of a child's caregivers are welcomed at the parent groups. This may include stepparents, extended family members, or foster parents. To remove potential barriers to attendance (such as the need for child care for siblings of the participating child), free child care, food, and aid with transportation are offered to parents on days that the parent group meets. A raffle at each group meeting for gift cards to local stores is also utilized as an incentive for attendance. All of the parent group materials have been translated into Spanish.

Research on the Effects of the KITS Program

Randomized Efficacy Trials

The KITS Program has been tested in three randomized clinical trials (RCTs). The KITS Foster Care Study, funded by the National Institute on Drug Abuse, involved 192 children in foster care and their families. The KITS Developmental Disabilities Study, funded by the Institute of Education Sciences, involved 209 children who had received early intervention or early childhood special education services for a developmental disability and also had social or behavioral problems that might

Table 1 Demographic characteristics of the KITS and SAU groups for the KITS RCTs

	KITS Foster Care Study ($N = 192$)		KITS Developmental Disabilities Study ($N = 209$)		KITS Promise Neighborhoods Study ($N = 265$)	
	KITS group	SAU group	KITS group	SAU group	KITS group	SAU group
Mean child age in years (SD)	5.26 (0.33)	5.25 (0.35)	5.26 (0.29)	5.28 (0.28)	5.21 (0.30)	5.21 (0.31)
Child sex (% male)	52	46	77	77	55	55
Child ethnicity (%)						
European American	55	51	71	67	44	45
Latino	30	31	14	14	42	42
African-American	1	0	1	2	2	0
Native American	2	0	1	2	0	2
Asian-American	2	0	1	1	0	1
Mixed race	10	18	12	14	12	10
Median caregiver education	Some community college or vocational school	Some community college or vocational school	≥1 year of 4-year college	<1 year of 4-year college	High school diploma and some vocational or technical but no diploma	High school diploma and some vocational or technical but no diploma
Median annual household income	$30–39,999	$30–39,999	$25–29,999	$25–29,999	$30–34,999	$25–29,999

interfere with the transition to school. The KITS Promise Neighborhoods Study was also funded by the Institute of Education Sciences and involved 265 children who lived in socioeconomically disadvantaged, high-crime neighborhoods. Table 1 lists the demographic characteristics of the three samples. Across the RCTs, procedures and measures have been similar.

Feasibility of the KITS Program Across Populations

Across studies, the participants who were randomized to the KITS intervention condition showed reasonable rates of attendance. As shown in Table 2, the majority of participants attended a majority of the groups offered. As is noted above, when parents could not attend a group, often due to conflicts with work schedules, the parent group facilitator would arrange to visit the parents at their homes (or at least via phone) in order to deliver the curriculum that they had missed in the group meeting. These rates are comparable or higher than attendance rates to programming shown by other high-risk groups (August, Lee, Bloomquist, Realmuto, & Hektner, 2003; Begle, Lopez, Cappa, Dumas, & de Arellano, 2012).

Following each parent group, the parents were asked to rate how helpful the content of each particular session had been on a scale of 0 *not helpful at all* to 3 *very helpful*. Satisfaction ratings were completed anonymously in order to promote parents' feelings that they could be open about their satisfaction. Mean satisfaction ratings across the studies are shown in Table 2. These were uniformly high. The ratings were confirmed via interviews with parents at the end of the intervention conducted by a staff member who had not been involved in the intervention. Across studies, the majority of parents who attended the KITS parent groups endorse their value and agree that attendance allowed them to make positive changes in their parenting. They also speak very highly of the school readiness groups in preparing their children for school.

Table 2 Attendance and parent satisfaction with the KITS intervention across RCTs

	Percent children attending 60% or more of school readiness groups	Percent parents attending 60% or more of school readiness groups	Mean parental rating of helpfulness of parent group content (0–3)
KITS Foster Care Study	75.5%	60.8%	2.7
KITS Developmental Disabilities Study	59.8%	52.3%	2.8
KITS Promise Neighborhoods Study	62.8%	61.3%	2.9

Outcomes for Children and Parents

In the KITS Foster Care Study, the intervention positively affected children's literacy skills (e.g., letter naming, initial sound fluency, and concepts about print) prior to the start of kindergarten, after the summer portion of the intervention (Pears et al., 2013). For children with developmental disabilities and behavioral and/or social problems, the KITS Program increased early literacy skills across the summer, and these increases significantly predicted better teacher ratings of literacy skills during the fall of kindergarten after the completion of the KITS intervention (Pears, Kim, Fisher, & Yoerger, 2016). Teachers were blind to the intervention status of the children. Preliminary findings from the first two cohorts of children in the KITS Promise Neighborhoods Study show that there are positive effects of the KITS Program on numeracy. Children who received the KITS Program showed significantly greater gains in their counting skills from the baseline assessment at the beginning of summer to the end of summer (preintervention mean = 23.08; end of summer after-intervention mean = 28.85) than did children who had not received the intervention (preintervention mean = 24.02; end of summer after-intervention mean = 26.58; F (1,246) = 4.19, $p < 0.05$), controlling for baseline cognitive competence.

One of the most robust set of findings from the KITS Program efficacy trials are the positive effects of the intervention on children's self-regulation. Findings from the KITS Foster Care Study showed immediate effects of the program on children's assessed and parent-reported self-regulation skills just prior to kindergarten entry (Pears et al., 2013). The intervention also decreased those children's oppositional and aggressive behaviors—hallmarks of poor self-regulation—as reported by teachers at the end of kindergarten (Pears, Kim, & Fisher, 2012). Children in the KITS Developmental Disabilities Study demonstrated gains in self-regulation through the end of the kindergarten year (Pears, Kim, Healey, Yoerger, & Fisher, 2015). Furthermore, the increased self-regulatory skills led to better social skills in the spring of these children's first grade year (Pears, Kim, Brown, & Yoerger, 2017).

The KITS Program also affects underlying physiological mechanisms of self-regulation. In the KITS Developmental Disabilities Study, the electrical activity in children's brains was measured using an electroencephalograph while the children performed a task to measure the self-regulatory skills of inhibitory control and attention. The children received feedback about whether they performed the task correctly or incorrectly. Results showed that after receiving the KITS intervention, children were more attentive to information that they had made a mistake, whereas there was no change for children who did not receive the intervention (McDermott et al., 2017). This is important because information that one has made a mistake may be more useful than information that one is answering questions correctly. If a child knows that she/he has made a mistake, she/he can work to correct the mistake in the future, which might lead to better performance in school.

Another physiological mechanism of self-regulation that is positively affected by the KITS intervention is children's hypothalamic–pituitary–adrenal axis response to

the naturally occurring stress of starting school. When an individual is faced with either physical or emotional challenges, the hypothalamic–pituitary–adrenal axis helps the body to respond by producing cortisol (Hennessy & Levine, 1979; Johnson, Kamilaris, Chrousos, & Gold, 1992). Elevated cortisol levels then signal the body to mobilize energy and other resources, allowing the individual to respond appropriately to challenges (Boyce & Ellis, 2005; Sapolsky, Romero, & Munck, 2000). One typical challenge for children is the transition to school. On the first day of school, children are entering a relatively unfamiliar environment with new people and new rules. In order for them to learn the new contingencies of this environment, they would need to have heightened attention and mobilized resources (two effects of increased levels of cortisol).

Recent findings (Graham, Pears, Kim, Bruce, & Fisher, 2017) from the KITS Foster Care Study demonstrate that the intervention had a significant impact on levels of cortisol production on the first day of school. Specifically, children who participated in the KITS Program showed a change in their normal daily rhythm of cortisol production, such that they had increased production on the first day of school. Children who had not participated in the program showed no such change. Because increased cortisol production heightens awareness and attention, this suggests that the KITS children were more aware of the transition to school and may have been more alert to the need to learn new rules and behaviors. That this was a beneficial occurrence was demonstrated by the fact that children who had increased cortisol production on the first day of school were rated by their teachers as doing better academically in the fall of kindergarten. Overall, the KITS Program has been shown to affect not only children's behavioral regulatory skills but also their attention and stress regulation on a neurophysiological level.

The KITS intervention also positively affects parents' behaviors. Parents who participated in the KITS intervention decreased their rates of inconsistent discipline across the summer prior to the start of school, compared to parents who were not randomized to receive the intervention (Pears et al., 2015). Inconsistent parenting was characterized by ineffective discipline techniques and parental failure to follow through on commands and requests. Such discipline has been linked to both poor school readiness and poor school performance (Dotterer, Iruka, & Pungello, 2012; Walker & MacPhee, 2011). Decreases in inconsistent parenting were significantly associated with increases in parental involvement in their children's schooling, as reported by teachers who were blind to the parents' study group status.

One key issue raised around the efficacy of kindergarten preparation programs has been the possibility of "fade out" of positive effects over time. Ultimately, the argument for investment in programs to increase school readiness rests on the ability to show that a program not only has positive effects on a child's transition to and performance in kindergarten but also on longer-term outcomes across the early grades and beyond (Heckman, 2000). Data from KITS Foster Care RCT suggest that positive intervention effects persist through at least third grade. As shown in Fig. 1, the KITS Program has positive effects on children's reading skills, specifically their oral reading fluency, in third grade through increases in self-regulation skills in earlier grades. Children who show better reading abilities

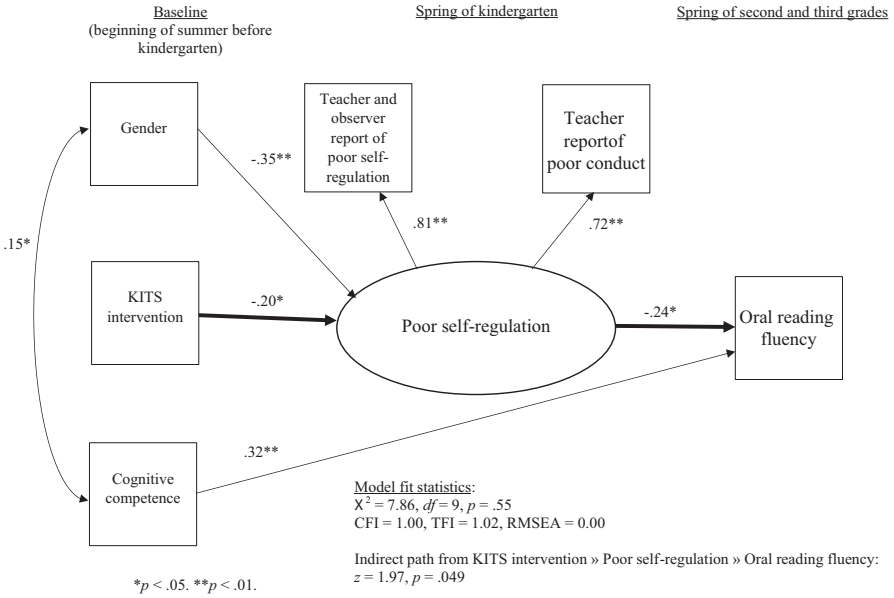

Fig. 1 Effects of the KITS intervention on oral reading fluency in second and third grades (*bold line* indicates significant indirect path)

in Grade 3 are more likely to graduate from high school (Hernandez, 2012). The link between reading skills and self-regulatory abilities is consistent with other studies showing that better early regulation abilities are linked to better achievement in reading across grades (Duncan et al., 2007; McClelland, Acock, & Morrison, 2006).

In addition to longer-term effects on academic skills, the KITS Program had effects on children's third-grade feelings of self-efficacy and their risk behaviors. Children with a history of placement in foster care are at increased risk for early involvement in alcohol and other substance use and abuse as well as delinquent behavior (Aarons, Brown, Hough, Garland, & Wood, 2001; Pilowsky & Wu, 2006). Children who received the KITS Program prior to kindergarten showed decreased early risk factors for such behaviors than did the children who were randomized to the services-as-usual condition (Pears, Kim, & Fisher, 2016). Children who had received the intervention had higher levels of self-competence at third grade, and higher self-competence was subsequently linked to lower rates of involvement with deviant peers. Participation in the KITS Program also directly decreased the likelihood that children would positively endorse alcohol use or other antisocial behaviors. Early endorsement of these behaviors has been linked to later involvement in substance use and delinquency (Andrews, Hampson, Barckley, Gerrard, & Gibbons, 2008; Andrews, Tildesley, Hops, Duncan, & Severson, 2003; Jacobs & Johnston, 2005). Thus, participation in KITS may have served a protective function for children in foster care.

Benefits of the KITS Program for Teachers and Nonparticipating Students

The KITS Program was designed to primarily affect children and their primary caregivers. However, there are several ways in which the KITS Program could have effects beyond the primary participants. Because the KITS Program features a comprehensive training and technical assistance component for providers, it has the potential to reach not only the children and families who participate but also other students and school personnel. For example, a regional scale-up of the KITS Program funded by the Social Innovation Fund (SIF) through the Corporation for Community and National Service—KITS SIF Study—began in Lane County, Oregon in 2016. Although in the smaller RCTs of the program all providers were hired and trained by the research center conducting the studies, in the KITS SIF Study, providers were employees of the school districts that were implementing the program. Thus, a majority were classroom teachers, educational assistants, or other school personnel (e.g., school psychologists, counselors) primarily in elementary schools—but also in preschool programs—and middle and high schools. This allowed us to test whether the teachers found the KITS techniques taught in training and used in the implementation of the curriculum to be useful and, importantly, whether they then utilized the techniques in their classrooms during the school year. Because the KITS strategies are evidence-based behavior management techniques, the diffusion of those practices into school classrooms through teachers and other educators who had been trained in KITS could have a number of benefits. First, research has consistently shown that strong teacher behavior management skills—including the abilities to set consistent behavioral expectations, create structure (e.g., rules and routines), promote positive student behaviors, and manage and decrease student misbehavior (Brophy, 2006), which are all featured KITS strategies–are associated with better academic and behavioral outcomes for students (Back, Polk, Keys, & McMahon, 2016; Freiberg, Huzinec, & Templeton, 2009; Grauerholz, 1987; Perry, Donohue, & Weinstein, 2007; Rimm-Kauffman, Curby, Grimm, Nathanson, & Brock, 2009). Conversely, greater amounts of nonproductive, disruptive classroom behavior lead to decrements in children's academics and behavior (Day, Connor, & McClelland, 2015). However, studies show that many teachers do not receive adequate training either preservice or through professional development opportunities once they are teaching (Friedman-Krauss, Raver, Neuspiel, & Kinsel, 2014; Ingersoll & Smith, 2003; Simonsen, Fairbanks, Briesch, Myers, & Sugai, 2008). Thus, the KITS training may fill a gap in educator's preparation and lead to better academic and behavioral outcomes for the students in their classrooms to the extent that they transfer the strategies from the KITS summer classes to their school-year classrooms. Second, training in the KITS techniques may be relevant to the well-being of the teachers themselves. Across settings, teachers most frequently cite difficulties with behavior management as contributors to high levels of stress and attrition (Friedman-Krauss et al., 2014; Ingersoll &

Smith, 2003; Simonsen et al., 2008). Thus, another benefit of the KITS Program to educators could be the reduction of job-related stress due to usage of the KITS strategies.

Evidence of these benefits of the KITS Program comes from the KITS SIF Study. Teachers ($N = 44$) who had been trained the previous summer to implement the KITS Program were surveyed when they returned the following summer regarding their frequencies and the impacts of utilizing KITS strategies in their school-year classrooms. Overall, 90% of the teachers indicated that at least one of the teaching and behavior management strategies that was taught during the KITS training and implementation was new to them, and this was true regardless of the number of years of teaching experience they had (Mitchell, Green, Patterson, & Pears, 2017). One hundred percent of the teachers indicated that they had used at least one of the KITS techniques in their classrooms during the regular school year, and 83% agreed that their students were better behaved because of strategies that they had learned in KITS. Furthermore, 91% of the teachers agreed that using strategies that they had learned in KITS had made the past school year a better year for them, and 77% said that it helped to decrease their stress levels. Although this was a relatively small sample, the results illustrate that teachers were transferring skills that they learned in the summer implementation of the KITS Program into their classrooms during the school year and that they saw benefits from this transfer.

Conclusions and Future Directions

The KITS Program was designed to provide high-risk children and families with developmentally timed and appropriate skills using evidence-based teaching and behavior management techniques, with the goal of helping children and families to navigate the kindergarten transition in ways most likely to set children on positive trajectories across their school years. The results from the three different RCTs described above support the premise that by providing programming focused on children's school readiness skills and caregiver's involvement and parenting skills at this critical juncture in young children's lives, we can increase their subsequent academic and behavioral adjustment in kindergarten. The evidence for changes at a neurobiological level further suggests that the positive effects may be expected to endure over the long term, as reflected in the persistence of effects on both academic and behavioral outcomes at least through the third grade. Thus, a broad and growing evidence base supports the efficacy of the KITS Program.

KITS is a time-limited intervention that is intentionally targeted at a critical transition in the lives of young children and their families. The relatively short-term nature of the program might be raised as a potential weakness, particularly in terms of the durability of effects. However, the time-limited nature of the program may actually improve the reach to children at highest risk for academic and behavioral struggles in school, including children from low-income families, those involved in

foster care, and those with behavioral difficulties that might have led them to be excluded from some preschool experiences (Gilliam & Shahar, 2006). These groups of children and their families exhibit high rates of residential mobility; parents may move in order to find employment, or may lose housing, or children's foster placements may change (Crowley, 2003; Fantuzzo, LeBoeuf, Brumley, & Perlman, 2013; Fowler et al., 2015). Thus, these children may not be able to receive the full dosage of prekindergarten programs that occur over the course of an academic year. With its time-limited nature, the KITS Program may allow children to receive the full dosage of the programming. Furthermore, as is noted above, many prekindergarten programs operate on an academic-year calendar. Children most in need of programming to increase school readiness skills may suffer the most from the resultant summer services gap, losing skills that they might have gained in other preschool programs or failing to gain additional critical skills (Alexander et al., 2001). With its time-limited and targeted programming, KITS can provide a bridge between other prekindergarten programs and the K–12 system.

The fact that the program primarily occurs during the summer months also allows K–12 teachers to participate. As is noted above, teachers appear to benefit from the training provided during implementation of the KITS Program. Thus, other potential benefits of the time-limited nature of the program are the opportunities for teachers who might otherwise be engaged in their "school-year jobs" to gain skills, interact with the children who may eventually be in their elementary classrooms, and meet the parents of these children prior to the beginning of the school year.

Future studies of the KITS Program will continue to examine how the intervention affects long-term outcomes either directly or through indirect influences on earlier skills. Additionally, we will continue to examine the possibilities of diffusion of benefits to students who did not participate in the intervention through effects on educators and even potentially school climate. Another long-term goal for the program is to continue efforts to make the curriculum culturally sensitive and relevant to families of dual-language learners.

Overall, the KITS Program suggests that time-limited interventions targeted at the kindergarten transition that are designed to increase the skills of incoming students and their caregivers can be effective. That said, it is important to note that there is unlikely to be a single "magic bullet" program that increases the likelihood of a positive transition equally across all groups of kindergarteners. As the chapters in this book illustrate, the kindergarten transition is a complex developmental phase that varies for children with different characteristics and life circumstances and whose outcomes are dependent upon other developmental phases before it. Thus, programming to promote positive transitions for all kindergarteners will need to address that diversity and continue over the course of children's early development. To the extent that intervention programs can complement each other and make additive, positive contributions to the interwoven sets of skills and contexts that support healthy kindergarten transitions, we can enhance the likelihood that all incoming kindergarteners will begin school on positive trajectories.

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Stretch to Kindergarten: A Model of Shared Partnership for Student Success

Betsy Nikolchev and Carmen Ponce

Abstract STK is a tuition-free parent participation spring and summer kindergarten readiness program of the Family Engagement Institute (FEI) at Foothill College in the Bay Area of California that bridges educational inequities by providing opportunities to strengthen the capacity of families, schools, and communities to work together to ensure the success of all students from early childhood through college. The program's relationship to an open access institution of higher education is unique and supports a multigenerational pathway to college to cultivate college-going aspirations for first-generation students and their families. STK promotes strong, enduring family-school partnerships in underserved communities to give children the skills and support to successfully transition into kindergarten and beyond. This chapter provides an overview of the program design, dual capacity family-school partnership practices, and evaluation results. Successes and challenges are reflected and shared in the lessons learned over the years to inform future directions for continuous improvement and policy reform in early childhood education.

Introduction

Stretch to Kindergarten (STK) is a tuition-free parent participation spring and summer kindergarten readiness program of the Family Engagement Institute (FEI) at Foothill College. FEI bridges educational inequities by providing opportunities to strengthen the capacity of families, schools, and communities to work together to ensure the success of all students from early childhood through college. STK has served over 700 children from families of low income who have no prior preschool experience upon entering kindergarten. The purpose of STK is to cultivate strong,

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enduring partnerships among families, schools, and the community to give children the skills and support to successfully transition into kindergarten.

In this chapter, we first provide an overview of FEI and STK's history and theory of change and describe our evaluation practices. Then we discuss STK's successes and challenges and reflect on the lessons we have learned over the years. Finally, we outline future directions for continuous improvement and identify research gaps that could potentially inform policy and practice.

Family Engagement Institute

Background

FEI closes educational inequities by providing opportunities to strengthen the capacity of families, schools, and communities to work together to ensure the success of all students from early childhood through college. Since its inception in 2010, FEI has been making a critical difference in the lives of children and families of low income, ensuring that all parents/caregivers gain access, tools, and the voice to support their children's learning outcomes while simultaneously supporting their own educational growth, development, and self-efficacy in leadership development and advocacy. FEI's unique position within Foothill College, an open access institution for higher education, cultivates a college-going identity for children and their families in its multigenerational model – Pathways to College For Two Generations. FEI believes that in order to break the cycle of poverty among all children and youth, we must start early and offer opportunities of continued education to families as well.

FEI practices a dual capacity model of family engagement by providing educational materials, toolkits, and college faculty to deliver developmentally, culturally, and linguistically responsive programs to our preschool to grade 12 partner organizations, where families enroll as community college students. Learning opportunities are provided for professionals and families together to build their capacity to engage in effective partnerships that support student achievement and development.

Equity and access to quality education through the implementation of effective family engagement strategies is central to the impact of FEI. The FEI model of family engagement is presented in Fig. 1. FEI is driven by a systemic, integrated, and sustained *Shared Responsibility* approach where success is measured by the following:

Families receive support, education, and opportunities to increase awareness of their critical role in their children's healthy development and school success and to engage in systems change work to transform their schools, neighborhoods, and communities in positive ways.

School- and community-based organizations receive educator/provider support and training and opportunities to increase awareness of the critical impact of family engagement on student outcomes across ages, developmental stages, and grades and

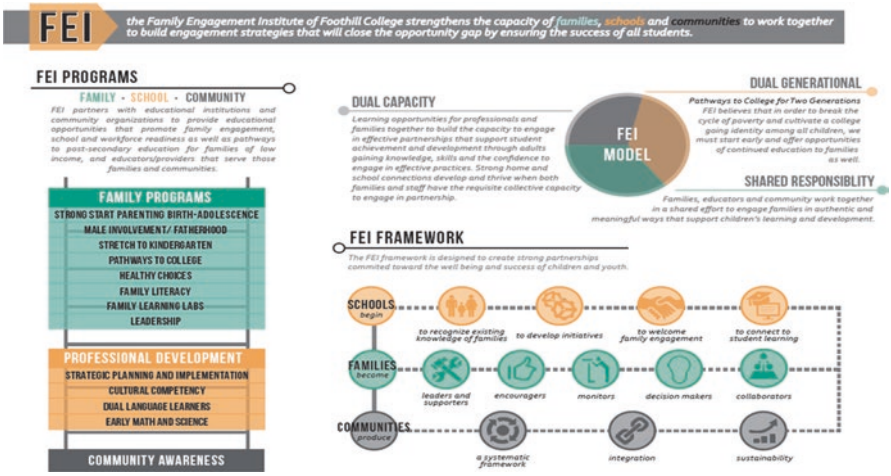


Fig. 1 FEI model of family engagement

to promote a commitment on behalf of educators to implement best practices that enhance their relationships with parents as partners.

Communities increase awareness of family engagement among local and national stakeholders that informs policy making to create healthy, thriving communities.

Stretch to Kindergarten

A cornerstone program of FEI is Stretch to Kindergarten (STK), a school readiness, tuition-free, 6 plus week spring-summer intensive program offered to families of low income with preschool-aged children entering kindergarten. STK is a supplemental spring-summer educational program that helps prepare children and their families for a successful transition to kindergarten. STK serves families who are income eligible – meeting the Free and Reduced Meals' Federal guidelines – and whose children are registered for kindergarten in the Bay Area of California. Priority consideration is given to children who have not had preschool and/or a quality preschool experience prior to entering kindergarten.

Mission and Philosophy

The purpose of STK is to cultivate a strong, enduring partnership among families, schools, and the community that gives children of low income the skills and support to successfully transition into kindergarten. The program provides an educational

experience that will help prepare families for kindergarten and the transition to school. STK is committed to strengthening families' capacity to support their children's learning in school and beyond.

STK believes that all children should have access to the opportunities that promote school readiness. Readiness includes ready children, ready families, ready communities, and ready schools. The program provides a meaningful, hands-on, integrated learning experience for children and families in a high-quality educational environment that aligns prekindergarten and kindergarten standards and practices and promotes language development. Additionally, it provides extensive professional development for educators and intern and mentor opportunities for youth. We value the importance of teacher-student interactions in supporting social, emotional, physical, cognitive, and language development. Supporting and engaging the whole family in making this important transition to school lays a solid foundation for long-term student success.

History

STK began in the summer of 2009 and served 40 children and families entering a local school district. The following year, the program expanded to serve 60 families in three classrooms to meet the growing needs of the district and has continued at the same level of enrollment each year. The success of STK drew interest from an additional local district where STK piloted a single classroom of 20 children and families in spring-summer 2013, expanded to three classrooms in spring-summer 2014, and continued at the same number, serving 60 children and families from its Title I schools in spring-summer 2015. The reputation of STK attracted a third partner, a charter school from a neighboring school district, where a single classroom of 20 children was piloted in spring-summer 2015 and fully funded by the partner site. In 2016, the STK program served three partner school districts for a total of seven classrooms.

Curriculum

STK's curriculum follows developmentally appropriate practices, recognizing the individual within the context of family, culture, and experience while setting challenging and achievable goals. The curricular framework is based on Preschool Foundations and Kindergarten Common Core Standards (WestEd and the Child Development Division, 2012) and project-based learning, an integrated, hands-on approach to learning in which the opportunity for in-depth exploration and examination of a topic deepens understanding and encourages thinking (Blumenfeld et al., 1991). Children's learning is dependent on the support of the adult through an interactive process of planning and implementation. The in-depth study of a topic

integrates all domains of curriculum: social-emotional, language and literacy, English language development, math, science, art, music, and motor development.

Curricula are informed by Personalized Oral Language Learning (POLL) (Many Languages, One Teacher: Supporting Language and Literacy Development for Preschool Dual Language Learners, Magruder, Hayslip, Espinosa & Matera, NAEYC, Young Children, March 2013) which is a set of practices and strategies derived from research on best practices for literacy instruction, with a special focus on oral language learning with young dual language learners. POLL strategies fall under three main categories: (1) families first, (2) environmental supports, and (3) instructional supports. Families first practices include conducting a family language and interest interview to promote understanding between teachers and parents and ascertain the families' existing literacy practices. Environmental supports promote a nurturing and engaging physical environment with learning centers that support exploration around class-generated topics. In addition, labels and book materials that reflect all languages and cultures should be present and visible to students. Finally, instructional supports encourage the use of instructional strategies such as displaying the topic and learning objective for the day using content vocabulary where students can see them and the use of an anchor text. Features of POLL can be seen throughout the structure of STK and support the emphasis on family as educational partners and contributors in the classroom and in parenting discussions, fostering family engagement strategies, leadership, and connections to community.

Program Structure

As a part of the STK program, parents and primary caregivers become students themselves. Families are enrolled in a community college noncredit parenting course and receive instruction over the course of STK's spring and summer sessions. This structure supports FEI's dual-generational model, providing not only educational opportunities to students but also continuing education opportunities to parents and primary caregivers.

Once students are identified as eligible for STK, families are contacted and invited to register for the program. Registration begins in March, about a month before the start of the program. As part of the registration process, families complete a families and teachers in dialogue interview. Similar to the family language and interest interview suggested by POLL (Magruder, Hayslip, Espinosa, & Matera, 2013), the families and teachers in dialogue interview was developed to foster the parent-teacher relationship and to gain a better understanding of the language and parenting practices of participating families. A member of the FEI team conducts the interview with the parents/primary caregiver(s), records the responses, and shares them with teachers before the start of the program. This allows teachers to enter the classroom with a deeper understanding of the family and a general understanding of where students are in their language development so teachers can prepare activities accordingly.

Before the spring session of STK begins, STK teachers are brought in for professional development. Professional development is a key strategy to ensure a quality kindergarten readiness learning experience for children and families. STK's most recent professional development series focused on the following priority areas: curriculum; dual language learners; dialogic reading; early math, family engagement; home-school connection; learning environments; school readiness; preschool learning foundations, kindergarten common core standards; and assessments and evaluation. Teachers receive 6 h of professional development in the week prior to the first spring session.

Spring Session

The purpose of the spring sessions is to give students the opportunity to become familiar with a school classroom with the support of their families, as well as to ease any anxieties about the transition for families. Similarly, teachers can become familiar with the group of students they will be working with over the summer and begin to develop the family-school partnerships that are so highly valued in the program. The spring sessions jumpstart the relationships that develop over the course of the summer and serve as a seamless transition into the core summer program.

The spring session of STK is comprised of three 3-h-long Saturday classes. In the first half of the class, teachers, families, and students enter into the classroom to learn together. In the second half, parents/primary caregivers attend the parenting course, designed as an interactive and reflective workshop, while students continue their STK activities. The first Saturday is spent getting to know one another and discussing topics such as the importance of routines or separation as an expected developmental challenge along with the related emotions. On the second Saturday, families attend a college visit day together where they tour a college campus and hear a panel of first-generation college-going students reflect on their college experiences. This visit is to the local community college where the STK families have been enrolled as college noncredit students, part of the FEI model to promote student equity. The college field trip is designed to inspire a college-going identity from an early age and introduce families to institutions of higher education. The final Saturday consists of reflecting on the college campus experience and preparing for the more intensive upcoming 6-week summer session of STK. After every session, families are sent home with home-school connection activities to do together that are meant to highlight the ways families can support what their children are learning in school and to foster parent-child connections as families learn through play. The materials required are easily accessible and affordable. One such activity centers around the book that has been selected as the focus for the project-based learning that will begin in the summer. Each family receives the book to prepare for the transition from the spring to summer program and keep in their home library. The kickoff activity provides questions that help families link the story to their own family experiences, promoting the POLL strategies and deepening the home-school connection.

One week after the spring session, the instructional coaches, teachers, and instructional assistants meet for more professional development and to debrief the spring session, reflect, and prepare for the summer session. A key reflection that is most often shared is the transformation teachers experience through their newly gained abilities to build deeper relationships with families and see families as asset-based partners in student learning. In preparing for summer, teachers are encouraged to enhance the curriculum by integrating materials from their own classroom that they feel would spark the interest of the students that they had the opportunity to get to know and better understand through the spring sessions.

Summer Session: A Typical Day

A few days before the summer session begins, the instructional teams meet for 2 days to complete their planning for the summer and set up their classrooms. Instructional coaches, teachers, and instructional assistants are required to attend, and youth mentors are invited to join if their college schedule permits. The summer session of STK is 6 weeks long and is held Monday through Friday from 8:00am to 2:15pm to reflect a full-day kindergarten schedule. Breakfast is made available to students every day, starting at 7:30am. The day begins with opening circle, where everyone gathers together to discuss the plan of the day. Families are invited to join if their schedule permits. The goal of opening circle is to foster the development of students' oral language skills. Drawing from one of the instructional support strategies of POLL, teachers construct a Message of the Day – a simple but meaningful message – designed to strengthen the home-school connection by inspiring conversation and open-ended questions between child and family. The Message of the Day is a question or statement that conveys the learning objective for the day and is informed by students' expressed interests from the previous day. It is written in English and all home languages in order to build literacy in students' home languages and English. The message is posted outside the classroom door and inside the classroom near the circle time area not only as a reminder to students and their families but also to encourage those unrelated to the program who share the school campus to inquire about the message and thus create extended community involvement. During opening circle, teachers review the Message of the Day, using content vocabulary that students will learn and practice throughout the day, as well as at home.

For the first 40 min of instructional time, students rotate through four different English Language Arts activities spending 10 min at each to maximize the opportunity for small group instruction. The four focus areas are dialogic reading, story writing, fine motor skills, and outdoor classroom literacy. In dialogic reading, children develop their oral language and vocabulary through the use of a shared book. The goal of this approach is for children to be able to retell the story in their own words after they have experienced all levels of dialogic reading. Dialogic reading principles promote language and comprehension skills with young dual language learners and develop confidence in implementing leveled dialogic reading practices

while incorporating DLL strategies in small groups. Story writing activities are based on student projects, the dialogic reading book, or the weekly self-portraits. Children dictate their ideas in either English or their home language and are transcribed accordingly. Activities aimed at developing fine motor skills include such sensory materials as playdough, handwriting without tears (Olsen, Knapton, & Fine, 2014), scissors, or tong activities. Outdoor literacy includes using the outdoors to expand the classroom with related activities such as nature walks, song and movement, and water "painting" their names, letters, and lines.

Once children have rotated through all four activities, they transition to project time. The class is divided into two groups at the beginning of a lesson. Each group generates a topic for a project that allows them to further explore the theme of that lesson. Students spend about a week on each project, and projects are meant to build upon one another. For the first 15 min, each group will engage in planning together, time that is meant to inform and guide students' project time as part of project-based learning. During this time, students utilize the instructional reading strategy Know-Want to Know-Learned charts (Ogle, 1986) and other Preschool Guided Language Acquisition Design (Preschool GLAD; Orange County Department of Education, Project GLAD and Whitehurst et al., 1994) strategies with the support of their teachers. Children then engage in project time where they execute the project plans they made during planning together time.

Children then break for snack and playtime. Upon return, there is a second 45 min block of math time where children rotate through four activities in small groups. Two activities focus on developing math skills and can include number games, counting "sets," reading counting or number books, identifying patterns, or singing number songs. The third set is focused on developing gross motor skills. These activities can include using balls and hula hoops, creating an obstacle course, or playing outdoor games such as Duck, Duck, Goose. The fourth set of activities includes outdoor STEAM activities. Once children have rotated through the four different activities, they transition to lunch and outdoor play.

Children and staff transition after lunch and gather together for a circle time of singing and storytelling followed by an hour of exploration time. This is an extended, uninterrupted period of time for children to freely explore a variety of materials and activities in both the indoor classroom and outdoor environment. This includes block play, an art makerspace, puzzles, books, and learning centers that may include math, sensory, science, reading, fine motor, gross motor, dramatic play, and cooking activities.

Finally, children gather together for the closing circle where everyone reflects on the Message of the Day as it connects to what the students learned that day. A book and song close the day. The purpose of the closing circle is to provide children with an opportunity to further develop their oral language and for teachers to reflect on the goals they were able to accomplish for the day. Families are invited to join if their schedule permits to extend the learning community and strengthen the home-school connection.

College Noncredit Parenting Course

FEI continues to expand opportunities for families and educators to promote continued education and a multigenerational college pathway with its unique position within Foothill College adding to the success of STK. Families have been enrolled in the college as noncredit students and are required to attend three parenting classes during the summer session of STK to complement the three classes they attended in the spring. Each session is an hour and a half long, and the most recent iteration of STK saw 100% attendance for these sessions. The first session covers topics such as what a school-ready child and family look like, building blocks for school readiness, and the importance of routines and home-school connections. Families receive a Kinder Kit at the end of the first session that includes a backpack and school supplies and weekly Kinder Kit activities to do with their children. The activities require that families and children engage with one of the focus books of the program. Each family receives a copy of the book to build their own home library. In the second session, parents brainstorm ideas on how they can find ways to use math with their child every day and incorporate math into play. Parents themselves get to practice math games with each other that they can then use with their children at home. At the end of this session, families are given the book The Three Bears to take home and use as a launching point to talk about math with their child. In the last session, families discuss their role in developing their child's love for reading. Families spend some time reflecting on songs or nursery rhymes they knew as a child and those they have passed on to their children. Teachers also share their experiences to begin to build their relationships with families. In addition, teachers spend time discussing the importance of maintaining a reading routine at home and stress the importance of maintaining students' home language and the gift of being bilingual. Families are given ideas for literacy activities they can do at home with their child to further strengthen the home-school connection. A sample of a home-school connection activity is for families to document a conversation with their child that mirrors one of the events that happens within the story.

The purpose of the parenting classes goes beyond providing families with opportunities to continue their own education and further their parenting skills; it also serves as a safe and welcoming learning community where families and teachers work together to practice relationship building to deepen the connections with each other. Teachers facilitate the parenting classes and hold parent-teacher conferences at the end of the program to discuss their students' progress together. These opportunities allow parents to gain a better understanding of the mutual benefits of sharing information with their child's teacher and experience what this should look like, what is expected, and how they can best advocate for their child. Additionally, the parenting class serves as a professional development opportunity for teachers to practice their skills in building strong partnerships with families. In this supportive learning community, teachers are facilitators rather than lecturers to foster the exchange of ideas with parents as peers and experts on their children. This provides a space for teachers to further develop their teaching skills and teacher identities, while at the same time giving parents a sense of agency over their own learning. Families are also asked to be part of a Parent Advisory Committee. The purpose of

the committee is to develop leadership skills and provide a model for how other parent organizations within schools function (e.g., Parent Teacher Association (PTA), English Learner Advisory Committee (ELAC), School Site Council (SSC)). Parents in the committee are asked to lead a project for the program in order to build community among the families. Finally, families learn about resources within their communities and schools (e.g., local libraries, museums, etc.) to ensure that their children are ready for school. At each session, teachers discuss the importance of oral hygiene, balanced diet, regular sleeping patterns, and highlight resources such as low-cost dental or health clinics in the area.

Instructional Team

One of the qualities that makes STK unique is the child-to-adult ratio within the classroom. At any given time during the program, there is one teacher, one instructional assistant, a mentor, three interns, and one to two parents within a classroom of 20 students. The STK program, and FEI more generally, is committed to supporting communities to strengthen their capacity to build engagement strategies that ensure they are healthy and thriving. The STK intern and mentor model supports this vision and has provided opportunities for learning communities where staff develop a deeper awareness of the community they serve and young people grow under the mentorship of experienced educators in quality learning environments. FEI believes this is the best model to sustain the healthy and successful development of students and communities. The opportunity to work within a supportive and collaborative team both in and out of the classroom is a unique professional experience, "Investing time for teachers to jointly plan lessons with their colleagues can raise the quality of instruction because lesson plans are produced through careful consideration by a team of experts who each bring varying, and often complementary, skills and experience to the process" (Kaplan, Chan, Farbman, & Novoryta, 2014, p. 14). The roles and responsibilities of these adults are described below.

Instructional Coaches At each site there is an instructional coach available to the rest of the instructional team to provide peer support. Coaches are recruited through the local school district and are often veteran STK teachers. The role of the coach is to create a supportive and encouraging environment where the coach and STK team can jointly examine and reflect upon current practices and apply new skills and techniques. Coaches provide support during planning meetings, observe instructional time, and provide feedback to the teaching team. Coaches assist the teaching team in understanding and utilizing their feedback, providing time for reflection on teaching practice. Open communication is crucial, not only to the development of a supportive and encouraging environment where this kind of working relationship is possible but also in order to resolve any challenging situations that may arise during the program.

Family Engagement Liaison Every site has a family engagement liaison who is responsible for creating an atmosphere that promotes and reinforces family engage-

ment. The liaison connects children and families with appropriate agencies as needed. The liaison provides support and translation during parenting course meetings and organizes and facilitates the Parent Advisory Committee meetings. As a result of their role within STK, the family engagement liaisons are well positioned to empower and encourage families to fully participate in the program. They are key players in the planning and implementation of meaningful activities for family engagement.

Teachers Teachers work collaboratively with the STK team to plan and implement a developmentally and culturally appropriate children's curriculum and parenting program. They are selected through the district in partnership with the STK administrators based on their level of experience with early childhood education. All teachers must hold either a Bachelor's or Master's degree. They are responsible for designing and maintaining an effective and engaging indoor and outdoor classroom environment that supports student learning. Teachers develop and maintain a welcoming and well-managed learning environment that ensures the safety and healthy development of both children and adults. They are responsible for supervising and mentoring classroom instructional assistants, mentors, parents, and student and youth volunteers. Their weekly responsibilities include developing and submitting a lesson plan with home-school connection activities, dialogic reading, math, and project activities included. Teachers submit a weekly parent-child calendar in English and Spanish to be given to families to keep them updated. Teachers are also expected to participate in staff development and coaching meetings, along with participating in program evaluation and assessments. Teachers are responsible for conducting two different assessments during the program: *The Desired Results Developmental Profile – School Readiness* (DRDP-SR) and *The Developmental Progress Assessment* (DPA), an individual student profile created by FEI to provide to the feeder schools. These assessments are meant to measure student growth over the course of the 6-week program and provide recommendations to parents for different activities that can be done at home to further prepare students for kindergarten. Teachers are also responsible for reviewing and participating in several other assessments discussed in further detail in the Evaluation section of this chapter. Additionally, teachers are responsible for facilitating the Parenting Classes and Parent/Teacher Conferences at the end of the program. Teachers recruit parent volunteers, especially on days that interns will not be present, to work in the classroom, attend field trips, help with special projects, and form a parent committee of three or more parents.

Instructional Assistants/Para-Educators Within each classroom is one instructional assistant. The instructional assistant provides support to the teacher in designing and maintaining effective and engaging indoor and outdoor classroom environments that support student learning. They assist in the development and maintenance of a welcoming and well-managed learning environment that ensures the safety and healthy development of both the children and adults in STK. One of the main responsibilities of the instructional assistant is to provide direct support to parent and student volunteers within the classroom. Additionally, instructional

assistants provide administrative support through maintaining proper records of attendance, parent volunteer hours, health forms, absence forms, injury reports, and emergency contact information. Instructional assistants are responsible for working with the teacher and family engagement liaison to contact parents when children are absent and for communicating with STK if a student is absent for more than 3 days.

Interns The youth intern and mentor model is designed to provide opportunities for staff to develop a deeper awareness of the community they serve and for young people to grow under the mentorship of experienced educators in quality learning environments. Student interns are often juniors and seniors from local high schools and/or first-generation college students who reflect the community of the families served at STK. They are committed to supporting the educational goals of underserved families and pursuing interests in child development and related fields. Interns are volunteers and gain incredible experience supporting the implementation of a high-quality kindergarten readiness program. Students are asked to complete an interest form in order to place them in support roles that are aligned with their interests. Students have the option of providing not only instructional support but also administrative support. There are two to three interns in every STK classroom. Because STK is committed to recruiting interns that reflect the surrounding community, outreach is done through local AVID programs, neighborhood centers, job fairs, and social media. Student interns sign up for 3-week increments with the option of continuing to work with STK for the entire 6 weeks. Students may continue to provide support in the areas in which they were originally placed or may request a different role. At the end of the summer, students receive a certificate for their community service. Oftentimes, the STK interns become mentors.

Mentors These college students are majoring in a field related to child development who are paid members of the STK instructional team and are often veteran STK interns. Each classroom has one mentor who provides support to the teacher with any task they may need help with. Mentors are responsible for providing support and mentorship to the student interns within their classroom. Before the summer session of STK begins, mentors train the interns at their site during a day-long session. During the summer session, mentors track intern attendance, email interns with their schedules and reminders for upcoming important dates, and communicate with the teacher if any intern will be absent or needs to make changes to their schedule. As a result of their role within the STK instructional team, mentors not only receive experience in the classroom but also gain experience managing a team.

Child Development Academy Students The Child Development Academy (CDA) is one of the many programs offered through FEI and is targeted to underserved youth and young adults to promote college access and workforce readiness. The CDA consists of a 6-week child development course with a field experience component, offered to local high school juniors and seniors at no cost. By the end of the course, students receive 12 units of college credit and a California Child Development Assistant Teacher Permit. The CDA is made possible through FEI's partnership

with Foothill College Student Services. STK provides CDA students with a high-quality early childhood program in which to complete their field experience, once a week for about 4 h, providing in-class support to the rest of the instructional team.

Leadership Team

The FEI executive director and STK program director provide the vision for the program and orchestrate the multilayered aspects of building a quality learning community. Both are seasoned and experienced administrators in the areas of early childhood education and family engagement. With their years of experience, they developed the framework, model, curriculum, and professional development for STK. In addition to this work, the leadership team is responsible for establishing and maintaining connections with school district and community partners, as well as mentoring and coaching the instructional coaches via professional development. They create and communicate tools and strategies for the instructional coaches to then share with the rest of the instructional team. Through this work, the leadership team provides the foundation and support that is essential for STK to effectively and consistently provide a high-quality preschool experience.

All members of the instructional team along with the curriculum and programmatic structure of STK come together to provide families with an empowering and community-rich school experience right before their student begins kindergarten. Families receive material resources like books and school supplies, as well as strategies for building their students literacy and numeracy skills at home and the agency to advocate for their students. The instructional team receives experience working in an ideal, collaborative classroom environment. They receive multiple opportunities to have positive and rewarding experiences engaging with families and consistent and constructive feedback from coaches through professional development and frequent classroom observations. FEI strives to create this kind of experience for everyone at STK every year. The commitment to evaluation helps accomplish this goal. Through feedback from the instructional team and families, STK is able to make adjustments and improvements to continue to provide a high-quality pre-k experience. In the following section, we will discuss how evaluation plays a key role in the success of STK.

STK Program Evaluation

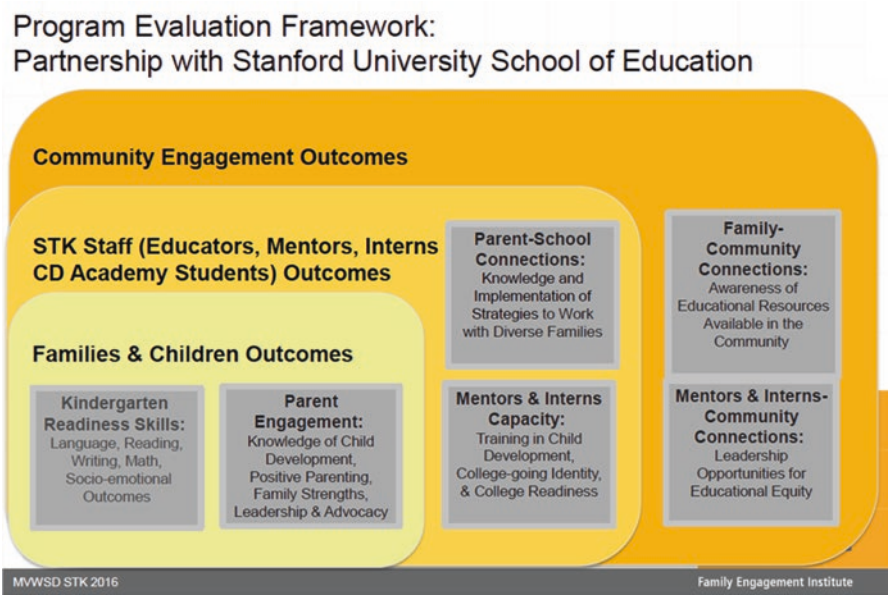
The STK program has conducted rigorous annual evaluations of program quality and effectiveness since its inception in 2009. While the types of measures have slightly changed over the years, the following four core areas of focus have remained the same and will be described in greater detail below: (1) program quality, (2) student outcomes, (3) dual capacity family engagement, and (4) dual capacity educator and youth engagement. While many programs rely mostly on teacher-reported

evaluations, STK utilizes external evaluators with the support of funders who have provided the resources necessary to complete such thorough evaluations to promote the program's continued success. The most recent evaluation of the STK 2016 program was conducted between April and December 2016 by Stanford researchers, Dr. Brenda Jarillo Rabling (brendaj@stanford.edu) and Professor Amado Padilla (apadilla@stanford.edu). This is a snapshot of the results.

STK 2016 served 137 children and families of low income entering kindergarten at three different school district sites. The percentage of children attending STK 2016 with no preschool experience remained high at 90%. Children enrolled who did not fall into the priority "no preschool" eligibility category were recommended by district principals and prekindergarten teachers because they needed additional time in STK's quality early childhood learning environment to be better prepared for kindergarten success. Family demographics were as follows: 73% Latino, 13% Asian/Pacific Islander, 10% Multiracial, 4% White, 72% home language of Spanish, and a majority of parents with limited educational attainment of a high school diploma or less. Average attendance across all sites was high, with children attending at least 25 out of the 29 days of the program. Parents also attended 16 out of 17 opportunities to participate in STK activities.

Evaluation Framework

The STK program evaluation framework supports the dual capacity model of family engagement whereby data is collected from children, youth, families, and the instructional team.



Evaluation Questions

Below is a table of the questions that guided the evaluation in each of the four categories: Evaluation Table

Categories	Questions
Program quality	What is the level of quality of the STK program?
	How does program quality compare to national averages?
Student outcomes	How prepared are students for kindergarten?
	What are their levels of language proficiency and kindergarten readiness?
	How do they compare to other demographically similar students?
Dual capacity family engagement	What are families' beliefs and practices about child development and parenting practices, and how to support their child's education?
	What is the impact of the STK family engagement educational component on parents' beliefs and practices?
	What do families say about STK?
Dual capacity educator and youth engagement	What is the impact of STK on staff's beliefs and practices to support family-school-community connections?
	What is the impact of STK on mentors' and interns' development?
	What are the beliefs and practices to support impact of STK on mentor and intern leadership skills and college-going identity and college readiness?

Evaluation Measures

Descriptions of the evaluation measures and corresponding categories are listed in the following sections:

Program Quality

Classroom Assessment Scoring System (CLASS)

The Classroom Assessment Scoring System (CLASS; Pianta, LaParo, & Hamre, 2007) is an observation tool that focuses on the effectiveness of classroom interactions among teachers and children. CLASS was developed to assess classroom quality in three domains: emotional support, classroom organization, and instructional support. It is developmentally based and assumes the primacy of teacher-child interactions as a major source of learning in the classroom. The CLASS involves four 15- to 20-min observations of teachers and students by a trained CLASS observer. The CLASS has been validated in over 2000 classrooms and is

used to reliably assess classroom quality and as an effective tool for teacher improvement. The following graph compares the combined STK 2016 CLASS scores for and the CLASS category scores for a national study of Head Start classrooms (http://eclkc.ohs.acf.hhs.gov/hslc/data/class-reports/class-data-2015.html).

There is a substantial body of research on the CLASS showing that there is an association between CLASS scores and gains in children's academic performance. The most consistent and strongest predictors of this academic success are scores in the Instructional Support domain which reflect effective teaching practices that promote higher-order thinking and creativity and give verbal feedback relevant to performance (Figs. 2, 3, 4, 5, and 6).

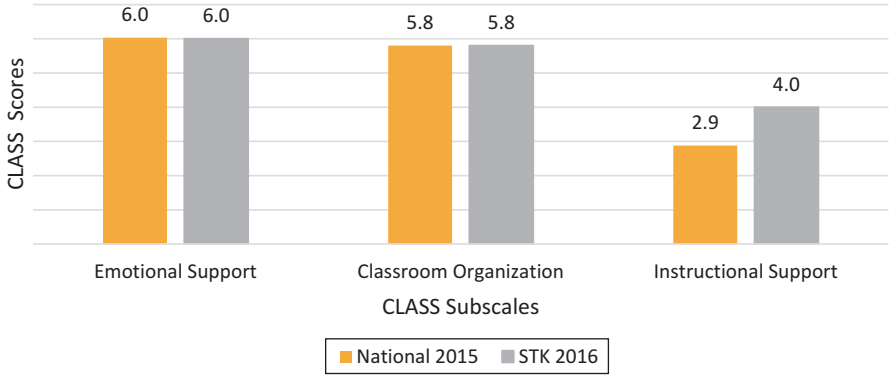


Fig. 2 STK and national preschool programs CLASS scores

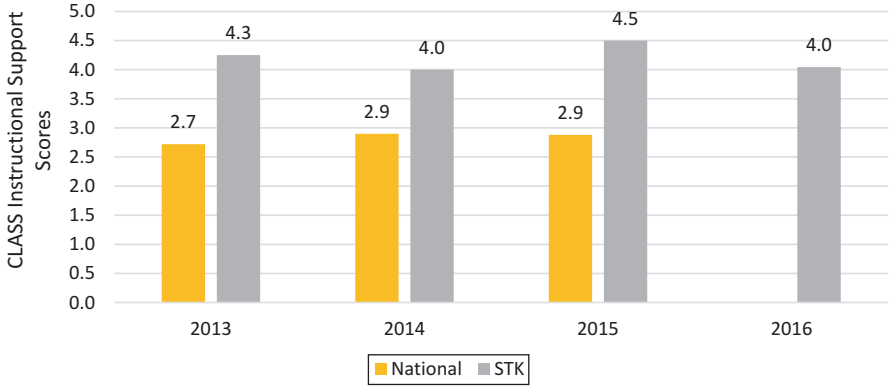


Fig. 3 CLASS instructional support average scores, STK sites and national scores over time

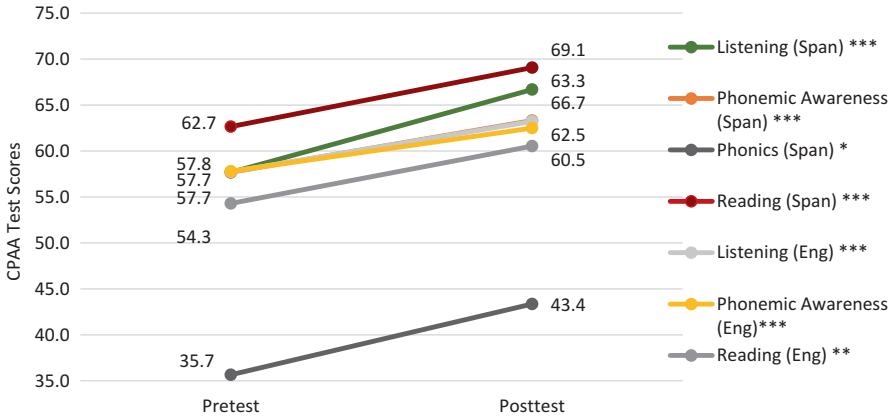


Fig. 4 CPAA literacy readiness in English and Spanish, full sample. Note: Statistically significance levels are 0.001***, 0.05**, 0.1*

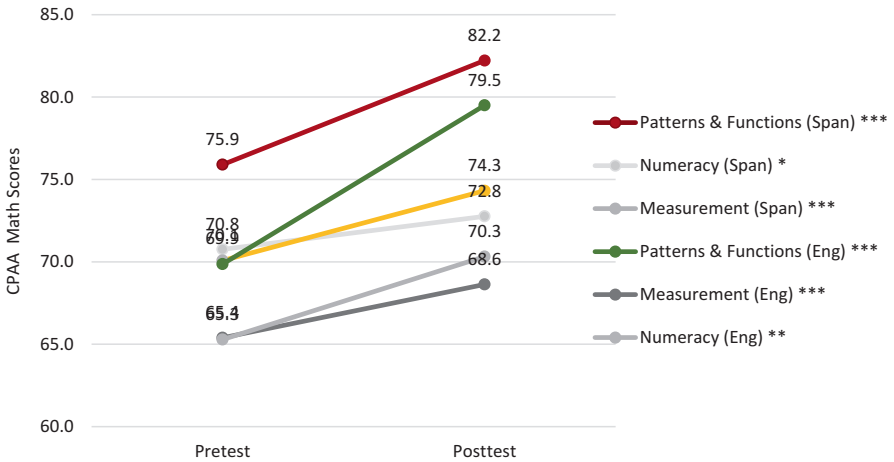


Fig. 5 CPAA Math readiness in English and Spanish, full sample. Note: Statistically significance levels are 0.001***, 0.05**, 0.1*

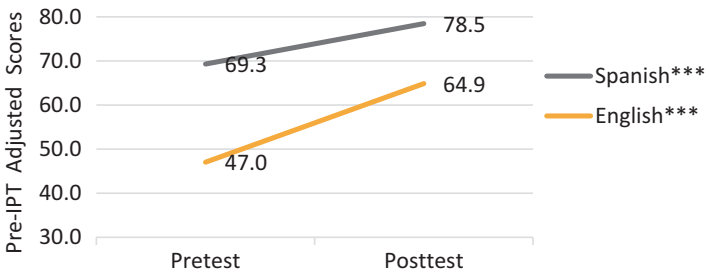


Fig. 6 Language proficiency IPT levels – STK 2016 in English and Spanish, full sample. Note: Statistically significance levels are 0.001***, 0.05**, 0.1*

Student Outcomes: Academic and School Readiness

Children's Progress Academic Assessment

The Children's Progress Academic Assessment (Northwest Education Association, 2017; CPAA) is designed to be developmentally appropriate in assessing early literacy and mathematics. It is aligned to the common core standards and the NAEYC developmental criteria for early learners. The CPAA examines four components of early literacy (listening, phonemic awareness, phonics and writing, and reading and reading mechanics) and mathematics (measurement, numeracy, operations, and patterns and functions). In addition, the CPAA can be used in English and in Spanish. This assessment was completed in English and Spanish at both the pretest and the posttest.

These CPAA results highlighted three important findings. First, there was growth in the children's development of literacy and mathematics. Second, this growth was evident in both languages. Third, these findings demonstrated the importance of assessing children in both languages. Most children were in the process of learning English while they were also learning new concepts. Testing children in Spanish allowed us to verify the children's ability to demonstrate what they knew in the language spoken at home and that the content of what was learned in the STK classroom was being reinforced at home. In other words, parents implemented enrichment activities that they learned in the parenting workshops in their home language.

Student Outcomes: Language Proficiency in English and Spanish

IDEA Proficiency Test (Pre-IPT)

The Pre-IPT (Ballard & Tighe, 2018) is a measure of productive language in Spanish and English. All students were given the Pre-IPT test in English to assess English language development, and Spanish speakers were administered the Pre-IPT in Spanish to measure their primary language skills. The Pre-IPT provides a raw score, from which a level of proficiency is assigned. While there are five levels, the classification of proficiency ranged from Not Fluent (Levels 1–2) to Limited (Levels 3–4) and Fluent (Level 5). Children were administered the Idea Proficiency Test(s) (Pre-IPT) at their entry to and exit from STK.

English results indicated an increase of 18 points and an increase of 9 points in Spanish. Further, Spanish-speaking children also made gains in the primary language spoken at home.

Pretest and posttest results showed changes across the five IPT levels (see Fig. 7). At the pretest, STK Spanish-speaking students had a fairly low level of proficiency in their native Spanish. It is important to remember that the majority of these stu-

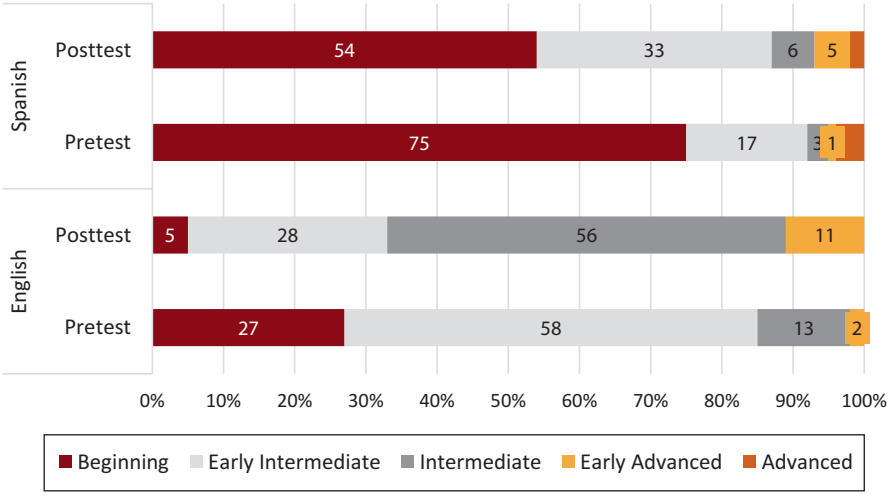


Fig. 7 Language proficiency IPT levels – STK 2016 in English and Spanish, full sample

dents had not yet had any preschool exposure at entrance to the STK program. By the posttest, a decrease in numbers of children in the beginning group with corresponding gains in all the other groups was apparent. IPT levels in English showed similar changes as can be seen in Fig. 7.

Dual Capacity Family Engagement

Family Survey

Parents and/or other members of a child's family were asked to complete a survey at the end of the summer session. The survey included questions regarding the family's knowledge and behaviors associated with parenting, child development, effectively engaging with their child's school, and at-home support for their child's education as a result of the STK program. The survey was used to measure the knowledge that families take with them as their children enter kindergarten and beyond. As a result of STK, 82% of families reported their children were prepared for kindergarten; 82% reported their children gained language skills (vocabulary and expression); 86% reported their children learned how to engage with peers and adults; 80–82% reported they gained knowledge and tools to support their children's school success through being an active partner in educating their children; helping their child express needs, feelings, and wants; spending time teaching their children new words; and understanding how parent-child connections impact brain development.

Families commented on their child's academic growth over the course of STK as well as changes in their child's independence and social skills. Families spoke to the

program's effectiveness in regard to the whole family being more prepared and comfortable for the transition into school.

> Great way to prepare my daughter for kindergarten. In STK, she made friends and learned social skills. She had the opportunity to access both languages [English and Spanish] and some Mandarin….

> My son loves the friendly teachers and all STK activities! He's learned new words and has made new friends. I am comfortable with him starting kindergarten because of this program.

> I am really grateful because I learned what it means for my child to be ready for kindergarten.

> STK has helped me improve my parenting. I know how to help my son learn. It also has showed me the value of being more involved in school with him.

> STK was a great experience for my kid and me too. I noticed from the beginning that my daughter was feeling extremely happy here! She learned not only math, reading and writing but also social skills. I see she is enjoying learning and this is important for me.

Program Quality Reported by Families

Program quality reported by families indicated almost all families felt that, across program sites, STK teachers and staff were prepared, knowledgeable, and respectful of their culture and identity. Families also highly rated teachers' responsiveness to their needs as well as teachers' accessibility and willingness to communicate with families, creating a welcoming and inclusive environment. Finally, a majority of families felt that teachers recognized their family's strengths as key to their child's success.

> Because of the quality of the teachers and staff, STK was a great opportunity for my family. We learned tools and skills to be ready for kindergarten. Thank you very much.

> As an immigrant family, STK helped us feel part of the community.

Almost all families thought that STK was excellent, would participate in the program again, and would recommend STK to other families.

Dual Capacity Educator and Youth Engagement

Educators Survey

Teachers completed a survey at the end of the summer session in which they were asked whether they gained knowledge or tools to help them engage families at school more effectively, through their experiences with the STK program. Teachers

were also given the opportunity to provide feedback on the program and describe opportunities for growth. Teachers in the program reported that as a result of participating, they better understood the importance of family engagement and its impact on student success. The majority of STK staff across school sites reported that they were satisfied with their STK experience and stated that they think STK was a positive turning point in their lives. All staff indicated they would recommend STK and would participate again.

> The high quality leadership opportunities brought to our campus as a result of the commitment of our partnership… have brought great benefits to the families of our neighborhood. – Principal

> The experience was so powerful...The benefits went far beyond parenting classes. We grew parent leaders and supporters. – Educator

Interns, Mentors, and Child Development Academy Students Survey

Youth were asked whether they had learned lessons in leadership, advocacy, and community engagement. Youth were also asked whether the program strengthened their college-going identities and motivation to attend college. Nearly all youth mentors and interns agreed that they had learned about the importance of teachers working closely with families to support children's education, learned the value of families supporting children to succeed in school, and learned the importance of making parents feel welcome in the classroom. Almost all youth mentors and interns reported that, through their STK experience, they also had learned that everyone deserves a good education and agreed that STK afforded them the opportunities to make a difference in children's lives.

> STK is very significant to me because it has allowed me to explore the many ways I can make an impact on a child's life. This program has helped me become more motivated to reach my goals in education.

These are invaluable lessons for the next generation of potential educators. It also demonstrates STK's lasting impact within communities, not just among families and their beginning students but also among youth in the community. Youth reported that they felt more connected with the STK community – people of different ages, backgrounds, and cultures; had a better appreciation of other cultures; felt like they were making a difference in the community; and learned ways to support their family, school, or community. In their own words, youth described their experience as:

> STK was an amazing learning experience. I learned so much about how to work with kids and made me feel very connected to them. I think this program is very unique and so helpful to so many families. I would love to continue to participate in this program for more years.

> My experience with STK was incredibly humbling, fun, and educating. I think the STK community (administrators, teachers, parents) was super welcoming, a warm community; and it was super incredible to be part of it and to get to be a role model for these kids.

In addition to learning more about family engagement and child development, youth described the benefits of STK in their development and pursuit of personal goals.

> STK has been incredibly valuable for me, because it has helped me realize my interest in teaching as a career. It has helped me to learn more leadership skills and I gained confidence in myself.

STK is a proven quality early childhood program as demonstrated by the evaluation results and participant testimonials. However, there is always room for continued growth. FEI has made great progress in establishing a shared public-private funding model whereby districts contribute a per child amount to offset the costs of delivering the high-quality program. But the challenge still remains in getting school districts to invest in relationship building that is critical to supporting the transition to kindergarten and essential for the sustainability of effective family engagement, especially within communities that have historically been marginalized by social institutions like schools. Dual capacity family-school partnership practices require time, a precious commodity valued at STK both in philosophy and in resource allocation, but school districts must also be ready partners to assume the role as initiators in family engagement. FEI welcomes opportunities that grow the voice of its youth, families, and teachers to advocate for STK-like programs that work to close the educational equity gap, and FEI continues to look for like-minded leaders and partners.

In conclusion, there is an untapped opportunity to replicate the STK model of strong and effective family-school partnerships beyond a prekindergarten spring-summer learning experience but well into school and beyond for the benefit of all children but especially our underserved communities. It is our collective responsibility to cast the net wide and advocate for high-quality learning environments for children and families. Authentic and meaningful family engagement advances equity and insures healthy development and school success.

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Promoting Positive Transitions Through Coherent Instruction, Assessment, and Professional Development: The TRIAD Scale-Up Model

Julie Sarama and Douglas H. Clements

Abstract The fundamental question of whether preschool effects "fade" is hotly debated in arenas of theory, research, and policy. Few of these debates consider the role of transitions. Might it be that poor transitions are at least partly to blame? That is, if transitions are neglected, present educational contexts may be unintentionally aligned against the long-lasting impact of early interventions. We conducted a series of studies of an implementation of a scale-up model that evaluated the persistence of effects of a research-based model for scaling up. The largest of these research projects was explicitly based on the theory that fade-out of effects would be mitigated by attention to transitions. Results indicated that the intervention condition that included the model's transition strategies maintained gains of the pre-K mathematics intervention better than the condition that did not include such strategies. However, more extensive and effective transition strategies should be developed and evaluated that expand on children's learning in preschool and thereby completely close equity gaps in mathematics through the primary grades.

This research was supported by the Institute of Education Sciences, US Department of Education, through grants R305K05157 and R305A110188, and also by the National Science Foundation, through grants ESI-9730804 and REC-0228440. The opinions expressed are those of the authors and do not represent views of the IES or NSF. Although the research is concerned with the scale-up model, not particular curricula, a minor component of the intervention used in this research has been published by the authors, who thus could have a vested interest in the results. An external auditor oversaw the research design, data collection, and analysis, and other researchers independently confirmed findings and procedures. The authors wish to express appreciation to the school districts, teachers, and children who participated in this research. Address correspondence to Julie Sarama, University of Denver, Kennedy Institute and Educational Research, Policy & Practice Katherine A. Ruffatto Hall 224 1999 East Evans Avenue Denver CO 80208-1700.

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Promoting Positive Transitions Through Coherent Instruction, Assessment, and Professional Development: The TRIAD Scale-Up Model

The fundamental question whether preschool effects "fade"[1] is hotly debated in arenas of theory, research, and policy. Some studies appear to show long-lasting effects, but many do not. There are multiple theories about why early effects might fade, but most evidence is descriptive or correlational. To bring some causal evidence to this important issue, we designed a large scale-up project based on our perspective, which is that fade-out may at least in part be a result of inadequate attention to transitions.

Built on this framework, the scale-up model is called TRIAD, for *T*echnology-enhanced, *R*esearch-based, *I*nstruction, *A*ssessment, and professional *D*evelopment. The TRIAD acronym suggests that successful scale-up must address the triad of essential components of any educational intervention—improving *instruction* by providing an empirically supported curriculum[2], promoting formative *assessment*, and supporting teachers' implementation of these with high-quality professional *development*—and that the model is based on research and enhanced by the use of technology. At the core of the TRIAD model is the use of research-based *learning trajectories*. Learning trajectories are "descriptions of children's thinking and learning in a specific mathematical domain, and a related, conjectured route through a set of instructional tasks designed to engender those mental processes or actions hypothesized to move children through a developmental progression of levels of thinking, created with the intent of supporting children's achievement of specific goals in that mathematical domain" (Clements & Sarama, 2004, p. 83). So, they have three components: a goal, a developmental progression, and an instruction fine-tuned to each level of that progression. We first instantiated the TRIAD model in the domain of early mathematics because such learning trajectories are well developed (National Research Council, 2009), not only for children of a given age but several years. This longitudinal nature affords the learning trajectories potential for supporting positive transitions. That is, as described in this chapter, they may support communication and connections across grades, providing connective tissue that will enhance the *coherence* of children's experiences.

Here our goal is to test hypotheses about how implementing the TRIAD model's transition strategies at scale may mitigate fade-out. The remainder of the chapter is organized into the following sections: (a) the historical context for that project, (b) TRIAD's theory of change and model—particularly as it addressed the fade-out

[1] The reason for the quotation marks is that we believe there are ramifications of the use of the term "fade-out." Although technically applied to the diminution of effect sizes, it is often interpreted as a *loss* of knowledge or skill or the evanescence of learning products or potential. This is consistent only with some theoretical interpretations and may be misinterpreted and misapplied to policy.

[2] The curricula used were an important component of the scale-up model and of the experiment, but this was a study of the *TRIAD scale-up model*, not only of a curriculum.

issue, (c) theories of the fade-out of early interventions, (d) TRIAD's design to address fade-out by supporting positive transitions, (e) TRIAD's implementation and research, (f) conclusions and implications, and (g) challenges the field faces and possible ways to meet them.

Historical Context: The Need for Early Mathematics Interventions at Scale

Although some research-based educational practices have shown promise in small-scale research studies, many have yet to be implemented at scale (Borman, 2007; Bornfreund, McCann, Williams, & Guernsey, 2014; McDonald, Keesler, Kauffman, & Schneider, 2006). The need is especially important in early mathematics, for at least four reasons. First, US proficiency in math is low (National Mathematics Advisory Panel, 2008). Second, students who live in poverty and who are members of linguistic and ethnic minority groups demonstrate significantly lower levels of achievement (Chernoff, Flanagan, McPhee, & Park, 2007; National Mathematics Advisory Panel, 2008) with that gap in the USA among the widest in 46 countries (Akiba, LeTendre, & Scribner, 2007). Third, such differences are evident from the earliest years (National Research Council, 2001, 2009; Sarama & Clements, 2009; Yuzawa, Bart, Kinne, Sukemune, & Kataoka, 1999). This is even more important because early mathematics competence predicts later achievement even into high school (National Mathematics Advisory Panel, 2008; National Research Council, 2009; Stevenson & Newman, 1986). Fourth, interventions to address these early differences appear to benefit low-resource and minority children because they have fewer educational opportunities in their homes and communities (Brooks-Gunn, 2003; Carneiro & Heckman, 2003; Natriello, McDill, & Pallas, 1990; Raudenbush, 2009). Unfortunately, most have not been taken to scale and often used the individual child as the unit of analysis, despite their assignment to treatments by class or school, which can inflate findings (Case, Griffin, & Kelly, 1999; for a review, see Clements & Sarama, 2011; Griffin & Case, 1997; Klein, Starkey, Clements, Sarama, & Iyer, 2008; National Mathematics Advisory Panel, 2008; Starkey, Klein, & Wakeley, 2004).

Any such scale-up project has to do a lot to succeed. However, there are additional challenges for those in the field of early childhood and another set of challenges for those focused on mathematics education. Early childhood, especially before kindergarten, includes settings and organizational structures that vary far more than do those at any other age level (Institute of Medicine (IOM) and National Research Council (NRC), 2015; National Research Council, 2009; Sarama & DiBiase, 2004). The workforce in those settings, their backgrounds, and their professional education are similarly diverse (Institute of Medicine (IOM) and National Research Council (NRC), 2015), with few incentives for individuals working in child-care centers or family child-care homes to seek specialized preparation for

jobs that pay little more than minimum wage (Sarama & DiBiase, 2004). These can seem insuperable problems, given that the most critical feature of a high-quality educational environment is a knowledgeable and responsive adult and that high-quality professional development is essential to innovation (Darling-Hammond, 1997; National Research Council, 2001, 2009; Sarama & DiBiase, 2004; Schoen, Cebulla, Finn, & Fi, 2003).

The domain of mathematics is also challenging. Teachers must develop knowledge of subject-matter content they teach, the ability to communicate this content to children, and the ability to develop higher-order thinking skills. Teachers, especially teachers of young children, are not prepared to do so (National Council of Teachers of Mathematics, 1991; Sarama & DiBiase, 2004), with many resisting or rejecting any "academic" intervention, especially in mathematics (Clements, Fuson, & Sarama, 2017). Consistent with the wider US culture, many teachers believe that mathematics is a set of facts and that memorizing these facts is an appropriate route to learning mathematics. These beliefs are notoriously resistant to change, and they affect teachers' practices and their children's learning (Sarama & DiBiase, 2004).

In summary, scaling up high-quality mathematics education within early childhood settings holds particular challenges that range from the logistical (e.g., all-day professional development may be difficult to implement for teachers with emotionally dependent children) to the philosophical and motivational (is leaning mathematics truly important for very young children?) and the practical (many teachers lack knowledge of the content of mathematics, as well as its learning and teaching). A theoretical model of scaling up successful interventions must address these challenges if it is to support a high-quality implementation.

The TRIAD Model for Scale-Up: Theory of Change

The overarching theory for our research and our development of a scale-up model is an elaboration of the Network of Influences framework (Sarama, Clements, & Henry, 1998). This describes the relationships and influences that must be attended to achieve successful scale-up. Successful implementation of an intervention at scale involves multiple coordinated efforts to introduce, implement, and maintain the integrity of the vision and practices of an innovation through increasingly numerous and complex socially mediated filters (for details of the framework and its relationship to TRIAD, see Sarama, Clements, Wolfe, & Spitler, 2012).

Built on this framework, the TRIAD scale-up model's acronym suggests that successful scale-up should use appropriate technologies (*T*echnology-enhanced) and empirical evidence (*R*esearch-based) to address the triad of essential components (*I*nstruction, *A*ssessment, and professional *D*evelopment) of any educational intervention. Our definition of a successful scale-up is instantiation of an intervention in varied settings with diverse populations, addressing the needs of multiple sociopolitical stakeholders, to achieve satisfactory fidelity of implementation and, as a result, the intervention's goals for the maximum number of children including

persistence of these effects. The remainder of this section summarizes the ten research-based guidelines in the TRIAD model, connecting it to the original Network of Influences theoretical framework (Sarama et al., 1998, 2012). Note that the TRIAD model was originally designed for all grades (and subject-matter domains), even if our instantiation has been in early mathematics.

1. *Involve and promote communication among key groups around a shared vision of the innovation* (Hall & Hord, 2001; Nyhan, 2015). Emphasize connections between the project's goals, standards, and societal need. Promote clarity of these goals and of all participants' responsibilities. School and project staff must share goals and a vision of the intervention (Bornfreund et al., 2014; Bryk, Sebring, Allensworth, Suppescu, & Easton, 2010; Cobb, McClain, de Silva, & Dean, 2003). This institutionalizes the intervention, for example, in the case of ongoing socialization and training of new teachers (Elmore, 1996b; Huberman, 1992; Kaser, Bourexis, Loucks-Horsley, & Raizen, 1999; Klingner, Ahwee, Pilonieta, & Menendez, 2003; Sarama et al., 1998).
2. *Promote equity* through equitable recruitment and selection of participants, allocation of resources, and use of curriculum and instructional strategies that have demonstrated success with underrepresented populations (Kaser et al., 1999; Moller, Stearns, Mickelson, Bottia, & Banerjee, 2014; O'Day & Smith, 2016).
3. *Plan for the long term.* Recognizing that scale-up is not just an increase in number but also of complexity provides continuous, adaptive support over an extended period of time. Plan an incremental implementation and use dynamic, multilevel, feedback, and self-correction strategies (Bryk et al., 2010; Coburn, 2003; Guskey, 2000). Communicate clearly that change is not a single event but a process (Hall & Hord, 2001).
4. *Focus on instructional change that promotes depth of children's thinking, placing learning trajectories at the core* of the teacher/child/curriculum triad to ensure that curriculum, materials, instructional strategies, and assessments are aligned with (a) national and state standards and a vision of high-quality education, (b) each other, and (c) "best practice" as determined by research, including formative assessment (Ball & Cohen, 1999; Bodilly, 1998; Bryk et al., 2010; Fullan, 2000; Higgins & Parsons, 2011; Kaser et al., 1999; Maloney, Confrey, & Nguyen, 2014; National Mathematics Advisory Panel, 2008; Nyhan, 2015; Raudenbush, 2008; Sowder, 2007; Wilson, Mojica, & Confrey, 2013). The learning trajectories serve as boundary objects (Akkerman & Baker, 2011; Wilson et al., 2013) that promote coherence and communication. This guideline is important for implementation with fidelity at any scale, although alignment is increasing important at larger scales and for transitions.
5. *Provide professional development that is ongoing, intentional, reflective, goal-oriented, focused on content knowledge and children's thinking, grounded in particular curriculum materials, and situated in the classroom and the school.* A focus on content includes accurate and adequate subject-matter knowledge both for teachers and for children. A focus on children's thinking emphasizes

the learning trajectories' developmental progressions and their pedagogical application in formative assessment. Grounding in particular curriculum materials should include all three aspects of learning trajectories, especially their connections (Clements, Sarama, Wolfe, & Spitler, 2015; Sarama & Clements, 2009). This also provides a common language for teachers in working with each other and other groups (Bryk et al., 2010; Wilson et al., 2013). Situated in the classroom does not imply that all training occurs within classrooms. However, off-site intensive training remains focused on and connected to classroom practice and is completed by classroom-based enactment with coaching—with coaches skilled in the innovation and in supporting teachers' learning and incorporation of new teaching practices (Clements et al., 2018; Jackson et al., 2014). In addition, this professional development should encourage sharing, risk taking, and learning from and with peers (Sarama, Clements, Starkey, Klein, & Wakeley, 2008). Aim at preparing to teach a specific curriculum and develop teachers' knowledge and beliefs that the curriculum is appropriate and its goals are valued and attainable. Situate work in the classroom, formatively evaluating teachers' fidelity of implementation and providing feedback and support from coaches in real time (Bodilly, 1998; Borman, Hewes, Overman, & Brown, 2003; Bryk et al., 2010; Cohen, 1996; Elmore, 1996b; Guskey, 2000; Hall & Hord, 2001; Kaser et al., 1999; Klingner et al., 2003; Pellegrino, 2007; Schoen et al., 2003; Showers, Joyce, & Bennett, 1987; Sowder, 2007; Zaslow, Tout, Halle, Vick, & Lavelle, 2010). As with guideline 4, this is important for implementation with fidelity at any scale. However, the planning, structures, common language, formative evaluation, and school-level context are increasingly important as the implementation moves to larger scales.

6. *Build expectations and camaraderie to support a consensus around adaptation*. Promote "buy-in" in multiple ways, such as dealing with all participants as partners and distributing resources to support the project. Establish and maintain cohort groups. Facilitate teachers visiting successful implementation sites. Build local leadership by involving principals and encouraging teachers to become teacher leaders (Berends, Kirby, Naftel, & McKelvey, 2001; Borman et al., 2003; Elmore, 1996b; Fullan, 2000; Glennan, Bodilly, Galegher, & Kerr, 2004; Hall & Hord, 2001).
7. *Ensure school leaders are a central force supporting the innovation and provide teachers continuous feedback that children are learning what they are taught and that these learnings are valued*. Leaders, especially principals, must show that the innovation is a high priority, through statements, resources, and continued commitment to permanency of the effort, with repeated communication with them so that the innovation is not forgotten (see guideline 10). An innovation champion leads the effort within each organization (Bodilly, 1998; Bryk et al., 2010; Glennan et al., 2004; Hall & Hord, 2001; Rogers, 2003, p. 434; Sarama et al., 1998).
8. *Give latitude for adaptation to teachers and schools, but maintain integrity*. Emphasize the similarities of the curriculum with sound practice and what teachers already are doing. Help teachers explicitly distinguish productive

adaptations from lethal mutation using specific activities (Brown & Campione, 1996). Also, do not allow dilution due to uncoordinated innovations (Fullan, 2000; Huberman, 1992; Sarama et al., 1998; Snipes, Doolittle, & Herlihy, 2002).

9. *Provide incentives for all participants, including intrinsic and extrinsic motivators linked to project work*, such as external expectations—from standards to validation from administrators. Show how the innovation is advantageous to and compatible with teachers' experiences and needs (Berends et al., 2001; Borman et al., 2003; Cohen, 1996; Darling-Hammond, 1996; Elmore, 1996a; Rogers, 2003).
10. *Maintain frequent, repeated communication, assessment ("checking up"), and follow-through efforts at all levels within each school district, emphasizing the purpose, expectations, and visions of the project, and involve key groups in continual improvement through cycles of data collection and problem solving* (Hall & Hord, 2001; Huberman, 1992; Jackson et al., 2014; Kaser et al., 1999; Snipes et al., 2002; U.S. Department of Education, 2016). Throughout, connections with parents and community groups are especially important to meet immediate and long-range (sustainability) goals.

Fade-Out of Early Interventions: Research and Theories

Although some studies indicate that prekindergarten interventions can have lasting effects (Broberg, Wessels, Lamb, & Hwang, 1997; Gray, Ramsey, & Klaus, 1983; Magnuson & Waldfogel, 2005; Montie, Xiang, & Schweinhart, 2006; Phillips, Gormley, & Anderson, 2016), most show such gains "fading" in the primary grades (ACF, 2010; Atchison, Diffey, & Workman, 2016; Claessens & Garrett, 2014; Natriello et al., 1990; Preschool Curriculum Evaluation Research Consortium, 2008; Puma et al., 2012; Turner & Ritter, 2004) or at best reveal mixed results (Bitler, Domina, & Hoynes, 2012; Hill, Gormley, & Adelstein, 2015). A recent meta-analysis on fade-out of early interventions involving nearly 1100 effect sizes taken from 65 studies reported an average impact of 0.26 SD but also that impacts decline by about 0.04 standard deviation units per year, which implies that program impacts persist, on average, for about 10 years (Leak et al., 2012).

There are at least five hypotheses about such fade-out (from Clements et al., 2018). First, the *learning begets learning* hypothesis (Carneiro & Heckman, 2003) posits that high-quality experiences result in greater school readiness and thus start a cascade of higher learning and achievement (Magnuson, Meyers, Ruhm, & Waldfogel, 2004). Second, the *inadequate potency* hypothesis attributes fade-out to the weakness and evanescence of the original intervention (ACF, 2010; Natriello et al., 1990; Turner, Ritter, Robertson, & Featherston, 2006). Third, the *latent trait* hypothesis holds that individual differences in children's later knowledge are more an indicator of stable, underlying characteristics related to learning and development throughout development (e.g., children's domain-general cognitive abilities,

motivation, and external environments, such as home and school cultures) than of direct effects of early achievement on later achievement (Bailey, Watts, Littlefield, & Geary, 2014; Cooper, Allen, Patall, & Dent, 2010). Fourth, the *insidious insipid instruction* hypothesis (Clements, Sarama, et al., 2018) suggests that many educational contexts (e.g., minimal demands of curricula, standards, and teaching practices) unintentionally undermine persistence of effects of early intervention (Brooks-Gunn, 2003; Cooper et al., 2010; Ramey & Ramey, 1998). For example, after a successful pre-K experience, children may experience kindergarten and first-grade classrooms in which both the teachers and curricula assume little competence and target only early-developing skills (kindergarten and first-grade instruction often covers material children already know even without such pre-K experience, Engel, Claessens, & Finch, 2013). Teachers may remain unaware that some of their children have already mastered the material they are about to "teach" (Bennett, Desforges, Cockburn, & Wilkinson, 1984; National Research Council, 2009). Even if teachers are so aware, pressure to increase the number of children passing minimal competency assessments may lead some teachers to work mainly with the lowest-performing children. Within this context and without continual, progressive support, children's early gains appear to fade (cf. Robertson, 2015; Zhai, Raver, & Jones, 2012). Fifth, the *latent foundation* hypothesis (Clements, Sarama, et al., 2018) holds that any effects of building a foundation of comprehensive proficiencies may be revealed when the demands of instruction increase. This suggests that assessments in grades in which complexity increases the most may be more likely to evince the long-term effects of early development of such comprehensive proficiencies. For example, in mathematics, first grade is substantially more difficult than kindergarten (CCSSO/NGA, 2010; Engel et al., 2013; Powell, Fuchs, & Fuchs, 2013) especially in the increase in requirements for conceptual understanding (Schmidt, personal communication, May 9, 2016); and fifth grade shows a similar substantial increase in mathematical demands (CCSSO/NGA, 2010; Heatly, Bachman, & Votruba-Drzal, 2015; Pianta, Belsky, Vadergrift, Houts, & Morrison, 2008; Powell et al., 2013; Schmidt, Wang, & McKnight, 2005; Westat & Policy Studies Associates, 2001).

Thus, when we designed the TRIAD model, we knew we must also address the issue of fade-out as children move through the primary grades. The following section discusses how this model and its evaluation address these challenges and these hypotheses.

TRIAD and Transitions

The issue of fade-out was prominent in the work by many, including ourselves. For example, fade-out of general early childhood programs is a long-standing issue, and, for ourselves, the positive effects of our intervention in the Preschool Curriculum Evaluation Research (Preschool Curriculum Evaluation Research

Consortium, 2008) project—one of only a couple that had significant effects (Klein et al., 2008)—faded by the end of kindergarten (Preschool Curriculum Evaluation Research Consortium, 2008). Therefore, we designed the TRIAD model and the second evaluation to focus on the transitions from preschool to kindergarten and first grade.

Given that the TRIAD model was originally designed for all grades, an important principle of our implementation was that pre-K interventions alone cannot be expected to "inoculate" children against risks of school failure (Brooks-Gunn, 2003; Clements, Sarama, Wolfe, & Spitler, 2013; Sarama et al., 2012), and therefore the TRIAD model should be implemented in kindergarten and first grade as well as pre-K.

Beyond this basic principle, several aspects of the TRIAD model speak specifically to transitions across these grades. There may be no more important feature of the TRIAD model to support transitions than its core of learning trajectories. This construct allows teachers at different grades to see how development occurs *through* the grades and how some children at any grade are operating at the same level of thinking as certain children in earlier and later grades (Wilson et al., 2013). Thus, the learning trajectories become essential boundary objects (Akkerman & Baker, 2011; Cobb et al., 2003; Wilson et al., 2013) that serve as connective tissue, linking the standards, curricula, and practices of all the grades in early childhood and facilitating communication and coordination among teachers across these grades. Such coordination, and especially collaboration, supports children, especially African-American and Latino/a children (Moller et al., 2014, relevant to guideline #2). TRIAD's guidelines #1 and #6, emphasizing communication and camaraderie, are important to building and maintaining such coordinated efforts.

These communications and connections are especially important in the pre-K to kindergarten transition. Curricula designed for kindergarten often assume low levels of mathematical knowledge and often focus on lower-level skills (Engel et al., 2013). A culture of low expectations for certain communities and groups may support the use of such curricula (Boser, Wilhelm, & Hanna, 2014; O'Day & Smith, 2016). Teachers are often required to follow such curricula strictly and may have few means to recognize that children have already mastered or surpassed the content they are about to "teach" them (Bennett et al., 1984; Clements & Sarama, 2009a; National Research Council, 2009; Sarama & Clements, 2009; Thomas, 1982). Even if they do recognize children's competencies, pressure to increase the number of children passing minimal competency assessments may lead teachers to work mainly with (and/or mainly at the level of) the lowest-performing children. Communication between pre-K and kindergarten teachers based on learning trajectories has the potential to go beyond the typical "let's make sure we're not doing the same activities" to focus on children's levels of thinking and therefore a sharing of educational practices for children at certain levels regardless of the grade, and, more important in kindergarten, the possibility that kindergarten teachers welcoming children who experience high-quality pre-K education can consider more extensive changes, such as curriculum compacting or other strategies.

Implementation and Research

A series of studies evaluated the TRIAD model from pre-K to first grade, with the most recent analyses involving the cohort of children finishing their fifth-grade year. We used a cluster randomized (at the school level) experimental design that enabled a formal test of the generalizability of TRIAD's impact over the varied settings in which it was implemented. Participants were the 1305 children from the original 42 schools in Buffalo, NY, and Boston, MA, who had both a pretest and posttest in pre-K (Clements, Sarama, Spitler, Lange, & Wolfe, 2011) and the kindergarten and first-grade teachers in those schools. Schools were randomly assigned to three conditions, TRIAD in pre-K only, TRIAD with follow-through (TRIAD-FT) in kindergarten and first grade, and a business-as-usual control.[3]

In pre-K, then, both the experimental interventions implemented the Building Blocks curriculum (Clements & Sarama, 2013) using the TRIAD model (details are available in Clements et al., 2011). Basic results were that teachers implemented the intervention with adequate fidelity and that pre- to posttest scores showed that the children in the Building Blocks group learned more mathematics than the children in the control group (effect size, $g = 0.72$).

In the kindergarten year, the two TRIAD groups differed, with only the TRIAD-FT group engaged in the TRIAD model (this was repeated the following year). Kindergarten (and, a year later, first-grade) teachers in those schools assigned to TRIAD's follow-through condition were engaged in multiple activities. First, staff met with kindergarten and pre-K teachers on site at each follow-through school to facilitate an exchange of information between the pre-K teachers and kindergarten teachers regarding the particular mathematics knowledge and skills of children who had participated in the *Building Blocks* curriculum during the preceding year. TRIAD staff then worked with the 43 kindergarten teachers for seven sessions, spread over the intervention year, teaching them (a) about the pre-K intervention and what children learned (some pre-K teachers again presented on the latter) and (b) ways to build upon it in kindergarten. That is, teachers were shown, through example assessments items and videos, the mathematics that many of their entering children had learned. Teachers were also taught about the learning trajectories appropriate to their grade level (including levels of thinking common in contiguous grades), including the developmental progressions and how to modify their extant curricula to more closely match the levels of thinking of their children. That is, teachers discussed ways to use learning trajectories to support formative assessment (Clements & Sarama, 2009b, 2014; National Mathematics Advisory Panel, 2008; Sarama & Clements, 2009; Wilson, Sztajn, Edgington, & Myers, 2015). For example, they examined activities from their kindergarten mathematics curriculum and discussed how they could productively adapt them for children at different levels of

[3] To maintain focus, we do not describe all the ways that TRIAD's guidelines were implemented, such as planning for the long term by starting with these schools for the research, but from the start scheduling counterfactual schools and any new teachers for professional development after the cohort of children had completed those grades.

thinking along the learning trajectory for that topic. Some schools organized pre-K to grade 1 learning communities (Giles & Hargreaves, 2006) and invited project leaders to attend meetings. They also received access to the Building Blocks software (Clements & Sarama, 2007/2016), the same suite that the children had used in pre-K, which follows the learning trajectories through the primary grades.

In summary, the TRIAD-FT intervention provided kindergarten and first-grade teachers with professional development to develop their knowledge of the pre-K intervention and strategies for building on that knowledge using learning trajectories (Clements & Sarama, 2014; Sarama & Clements, 2009; Sztajn, Confrey, Wilson, & Edgington, 2012). We recognized that this was not a full curricular and pedagogical intervention such as that implemented in the pre-K TRIAD classrooms. The kindergarten and first-grade curriculum was "research-based," but not one based on learning trajectories as we define them. Thus, teachers of those grades would have had to impose a learning trajectories framework on a different curriculum, putting far more demands on the teachers who received less than half of the professional development for half of the time (1 year instead of 2). However, the intervention nevertheless served as an indirect test of our insidious insipid instruction hypothesis.

In addition, several unforeseen challenges confronted our vision for implementing these admittedly limited transition-based innovations. The year that the children started kindergarten, one district adopted a substantially revised version of their mathematics curriculum, the kindergarten level of *Investigations* (Investigations in number, data, and space, 2008), while the other district continued to use the first edition of the same curriculum. *Both* districts wrote and disseminated "pacing guides" that established what unit of the curriculum should be taught each week. For example, specific lessons were to be taught on specific days (e.g., lessons from the curriculum's "Day 1" on Oct. 7, lessons from "Day 2" on Oct. 8, etc.). The "walk-through" form used by administrators included items on this pacing guide. Teachers discussed the fact that any modifications using formative assessment, much less curriculum compacting, were all disallowed by what they called the district's "fidelity police." Efforts to institute the TRIAD guideline regarding communication were unsuccessful in most cases to change these opposing viewpoints.

Results showed the expected fade-out; that is, the effect size decreased for both experimental groups. Nevertheless, both TRIAD groups continued to outperform the control condition (g = 0.46 for the follow-through, g = *0*.30 for the non-follow-through) at the end of their kindergarten year (Sarama et al., 2012). Differences were more pronounced at the end of first grade, with both experimental groups scoring significantly higher than control children (g = 0.51 for TRIAD-FT; g = 0.28 for non-follow-through), and TRIAD-FT children scored significantly higher than non-follow-through children (g = 0.24) (Clements et al., 2013). Analyses revealed just one consistent moderator. In all years, the TRIAD implementation was particularly beneficial for children who identified themselves as African-American. Mediators were complex, but again one was strongest and most consistent across the grades: The TRIAD follow-through intervention's effect was partially mediated by an increase in a positive classroom culture regarding mathematics thinking and learning.

At the time of this writing, we are analyzing the results of following this TRIAD cohort into their fifth-grade year. Without any intervention after first grade, the results continue to decrease for all groups. Effects were near-zero by fourth grade, but impacts on math achievement reemerged at fifth grade, and impacts were greatest on children who remained in their original assignment condition ("stayers") to receive the full dose of their respective treatments (Clements, Sarama, et al., 2018).

Challenges and Next Steps

Many challenges faced us during TRIAD's implementation, as they do any large-scale implementation. Bringing together diverse groups to support an intervention is alone a challenging task. Achieving an adequate level of fidelity of implementation presents challenges such as sufficient materials, technology, professional development, in-class support, and so forth. Supporting transitions between grades places additional demands on administrators, teachers, and staff. Each of these challenges requires both financial and social capital. A critical example of social capital is the essential support of school leaders, which drives improvements in all other components of the system (Bryk et al., 2010).

Turning to transitions, the follow-through treatment was, as we described, useful but too limited. Financial and logistical constrains kept us from implementing aligned curriculum in kindergarten and first grade and providing multi-year professional development. We are participating in new studies using different strategies, but more creative efforts are needed, such as starting in pre-K and implementing learning trajectories-based curriculum using the full TRIAD model for each consecutive year throughout elementary school. In general, too, the specific contribution of the learning trajectories per se, especially as connective tissue between grades, needs to be disentangled and identified. We are conducting a series of studies funded by IES to do so.

Conclusions and Implications

The best predictor of a successful academic career is early mastery of literacy and mathematical concepts and skills (Aunola, Leskinen, Lerkkanen, & Nurmi, 2004; Duncan, Claessens, & Engel, 2004; Paris, Morrison, & Miller, 2006). Children from low-resource communities benefit more relative to children from higher-resource communities from the same "dose" of school instruction (Raudenbush, 2009). Thus, comprehensive implementations of research-based interventions may be especially effective in low-resource schools such as those in this project. This was the goal of our TRIAD project—to create a theoretically and empirically grounded model of scale-up and to increase knowledge of scaling up, and particularly the persistence of

effects with and without follow-through, by conducting research that investigates the effectiveness of an instantiation of that model.

Evaluations at the pre-K level indicate that the TRIAD model shows promise in scaling up at least one educational intervention across a large number of diverse populations and contexts in the early childhood system. This evaluation supports major guidelines of the TRIAD model that involve the use of learning trajectories, contributing to the growing research corpus that supports the educational usefulness of learning trajectories, including evaluations of curricula built upon learning trajectories (Clements & Sarama, 2007, 2008; Sarama et al., 2008), elementary curricula based on related trajectories (Agodini & Harris, 2010), studies of successful teaching (Wood & Frid, 2005), and professional development projects (Bright, Bowman, & Vacc, 1997; Clarke et al., 2002; Wilson et al., 2015; Wright, Martland, Stafford, & Stanger, 2002). This supports the use of such structures in standards, such as the *Common Core State Standards* (CCSSO/NGA, 2010).

Although preschool is important—proficiency in math at the start of kindergarten accounts for the greatest decrease in the SES-math achievement gap (Galindo & Sonnenschein, 2015)—the primary grades must *build on* that positive start. Although effect sizes decreased in both groups, children in the TRIAD-FT group maintained their relative gains due to the interventions at kindergarten and first grade more than did children in the TRIAD group who did not have those transitions.

The TRIAD follow-through intervention's effect was partially due to the increase in the positive classroom cultures teachers develop. Interventions such as TRIAD may help engender a greater focus on mathematics, which in turn can help increase children's mathematics achievement. As other work has shown (Carpenter, Fennema, Peterson, & Carey, 1988; Clements et al., 2011; Jacobs, Franke, Carpenter, Levi, & Battey, 2001; National Research Council, 2009), helping primary teachers gain additional knowledge of mathematics, children's thinking and learning about mathematics, and how instructional tasks can be designed and modified—that is, the three components of learning trajectories—has a measurable, positive effect on their children's achievement.

The TRIAD-FT intervention especially helped narrow the achievement gap for African-American children. A high-quality, consistent mathematics education can make a demonstrative and consistent positive impact on the educational attainment of African-American children in the pre-K, kindergarten, and first-grade years compared to traditional instruction.

How do these results speak to the various hypotheses regarding the fade-out issues? First, there is no support for the most optimistic, learning begets learning, hypothesis. Effect sizes did decrease considerably. Our brief intervention (approximately 15–25 min per day) did not initiate a cascade of higher learning and achievement. This supports the notion that attending to transitions is critical.

It could be argued that our data is consistent with the second, inadequate potency, hypothesis. Again, the intervention was just a few (15–20) minutes per day and quite distinct from studies that compare an entire preschool program to children who attended no preschool. Thus, very large and lasting effects across domains would not be credible. However, in mathematics alone, although the effect size

(0.72 SD) in scale-up conditions was substantially smaller than in more controlled conditions during pre-K (in which effect sizes more than doubled this, Clements & Sarama, 2007), for a large-scale implementation of a relatively limited intervention, this must be considered at least a moderate effect (and greater than most, cf. Borman et al., 2003; Leak et al., 2012). Just as important, this hypothesis reifies the treatment effect as an entity that should persist unless it is "weak" and thus susceptible to fading. Such a perspective identifies the gain not as a snapshot of relative achievement but rather as a static object "carried by" the student that, if not evanescent, would continue to lift the student's achievement about the norm. Our theory (Sarama & Clements, 2009) does not share this view—that education and its effects are strictly about individual accumulation of knowledge.

The third, latent trait, hypothesis is supported by our analyses. This more pessimistic view is that stable characteristics are more influential than learning experiences over a limited time. The decrease in effect sizes across the entire follow-up period is consistent with the meta-analysis (Leak et al., 2012), with our decrease even greater at each year through the fourth grade, beginning with the greatest drop between the end of pre-K and the end of kindergarten of approximately 0.4 SD. We return to this issue after considering the other hypotheses.

Support was also given to two final hypotheses. The reemergence of significant effects at two critical point in elementary education—the transition to the increasing demands of the mathematics curricula of first and of fifth grade—supports the *latent foundation* hypothesis. Effect sizes at first and fifth grade were larger than impacts at kindergarten and fourth grade for both conditions, among all children and within all subgroups. It may be that children's early math learning helped them meet the greater mathematical demands introduced in first and fifth grades by building a foundation of comprehensive mathematics proficiencies. Because this was true for children in both TRIAD conditions, this may have been based on pre-K learning, rather than the follow-through intervention.

However, the decrease in effect size was greatest between pre-K and kindergarten—the latter a particularly unchallenging year (Engel et al., 2013). This finding supports the insidious insipid instruction hypothesis that the large decrease in the effect size was much more likely a "catch-up" than a "fade-out" phenomenon. Further, the decrease was less for the first-grade TRIAD-FT group than the first-grade TRIAD-NFT group, indicating that the follow-through work with first-grade teachers may have supported young learners in their transition to more challenging mathematics.

An implication of our results and the relative support for the various fade-out hypotheses is that children's trajectories must be studied as the children experience different educational courses. Intervention effects are relative, both in contrasting experimental and control groups and, longitudinally, to the nature of educational experiences the children in these groups subsequently receive. Although this might appear to be an issue of simple "educational engineering," the issue has substantial implications for both theory and policy. Interpretations of this "fade" often call for decreased funding and attention to pre-K (Fish, 2007). That is, if one accepts the inadequate potency hypothesis (even give substantial investments and efforts) or,

more pessimistically, the latent trait hypothesis, it is not unreasonable to stop funding education in the early years. Although this may appear economically reasonable, we believe this mistakenly treats initial effects of interventions as independent of all future school contexts and of their interrelationships (alignment and continuity). Instead, we believe children's trajectories must be studied as they experience different educational courses and especially the transitions between consecutive years. If such effects "fade" in traditional settings but do not (or do not decrease as much) in follow-through interventions, then attention to and funding for follow-through efforts, including transitions from one grade to the next, for *both* pre-K and the primary grades should arguably increase.

Supporting this argument, our results and the implications we draw from them are consistent with other studies. For example, children from preschool intervention-enrolled classrooms, who transitioned to higher-performing elementary schools where the instructional quality was also high, maintained their initial learning gains, when compared to demographically similar children in the control group who also transitioned to higher-performing schools (Zhai et al., 2012). Children who are at-risk need continuing diagnosis and support (Brooks-Gunn, 2003; Mononen, 2014) using research-based learning trajectories (Salaschek, Zeuch, & Souvignier, 2014). This is the main lesson we learned from the TRIAD project: The sustainment of intervention effects requires the sustainment of high-quality, *connected*, *coherent* education based on research, including research on learning trajectories.

In summary, we agree that the latent trait hypothesis helps explain fade-out. However, there are two diametrically opposed implications that can be drawn from these findings. The "silver bullet" perspective holds that if pre-K effects are not sustained with no further support, we abandon pre-K and look for a different "magic" (Brooks-Gunn, 2003) alternative. (Few support such an approach to, say, one or more of the primary grades.) We take the position that the future well-being of both individuals and the society to which they can and would contribute are better served by improving preschools, all subsequent grades, and the coherence among them by fully implementing research-validated interventions, such as the TRIAD model across this span, to provide equitable support to all children in all grades.

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Alignment and Coherence as System-Level Strategies: Bridging Policy and Practice

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Abstract A system-level perspective on the transition to Kindergarten requires consideration of the differences that exist between the systems of birth-to-five early care and education (ECE) and K-12 education. Challenges in bridging these systems are rooted in paradigmatic and structural differences that make ongoing, meaningful collaboration and alignment between ECE and K-12 difficult and complex to address. With practitioners and policymakers alike experiencing the challenges, the impetus to address them is heightened by the prominent national focus on school readiness and closing achievement gaps by third grade. This chapter explores theoretical rationales for creating more coherence and alignment across the birth through elementary school age range (P-3), providing a picture of how children's learning opportunities would be positively influenced by system-level alignment work. Schools and districts that have engaged in system-level alignment efforts show promising improvement in child-level outcomes. The chapter provides examples of alignment strategies at the level of implementation and proffers suggestions for how research, policy, and practice can contribute to greater coherence between the ECE and K-12 systems.

Throughout this volume, the term "transition" is most frequently used to refer to the shifts that children and families experience as they enter Kindergarten classrooms. "Coherence," "continuity," "consistency," and "alignment" are other words used to describe the necessity of bringing together prior-to-school (which includes a wide variety of early care and education settings and programs) and Kindergarten experiences in ways that benefit young children and their families. This chapter expands our understanding of these terms by focusing on *system*-level strategies that contribute to transition, alignment, coherence, continuity, and consistency. With this system-level lens, this chapter also expands the focus beyond the 1 year prior to Kindergarten (PreK) and Kindergarten and addresses the full continuum of learning from birth through elementary school.

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Efforts to address this developmental continuum have been ascribed a variety of labels – P-3, PreK-3rd, PreK-3, PK-3, 0-8, B-3, and others. In this chapter, I favor "P-3" and focus on the array of early care and education (ECE) programs that serve children before they enter school and their connections with the primary grades of elementary school (K-3). System-level alignment requires a complex array of strategies needed to bring greater coherence between the traditionally disparate systems of birth-to-five early care and education (ECE) programs and PreK-12 education. This chapter addresses practical, theoretical, and policy aspects of P-3 alignment approaches.

Rationale for Alignment Across Systems: Two Vignettes

One challenge with alignment as a system-level strategy is that it can seem abstract and disconnected from practice and the real lives of young children. The following two vignettes illustrate the importance of system-level alignment, providing perspective on real-world implications.

Vignette #1

Joaquin Enfield is an elementary school principal in a school district with five elementary schools. Every fall, 85 children start their K-12 pathways in Enfield's school by enrolling in Kindergarten. Some will attend half-day programs; others will attend full days, being at school for the same number of hours as first graders. Enfield hosts an annual open house for entering Kindergarteners during which children and their parents can meet the Kindergarten teachers and tour classrooms. Usually, 15–20 families attend; he gains minimal information on their children's experiences prior to Kindergarten. For the other 65 children, Enfield meets them for the first time when they arrive at school.

Enfield knows that aggregated data from the state-mandated Kindergarten Entry Assessment (KEA) show that a large majority of his Kindergarteners lag far behind district and state averages and lack the necessary skills to succeed. Because of this, he senses pressure from parents, the district central office, and the state department of education to provide rigorous, academic learning to all students and to close achievement gaps on the state third grade tests. To demonstrate his commitment to academic excellence, his annual school improvement plan has a singular focus: to increase student performance on reading and math assessments. As part of this goal, Enfield increased the length of reading and math blocks in the primary grades and decreased recess time.

Devoted to standards-based learning, Principal Enfield relies on the Common Core State Standards, which set standards for what children should know and be able to do at the end of each grade level, to structure teachers' professional develop-

ment. During grade-level meetings with his Kindergarten and first and second grade teachers, he encourages them to collaborate to develop worksheets to be sent home with children so their parents can support reading and math skill repetition.

Vignette #2

Anne Burke is also an elementary school principal but in a neighboring school district. She, too, has approximately 85 entering Kindergarteners each fall. Approximately one-fourth of these children attend PreK classrooms that are colocated at Burke's school; the colocation of PreK was something Burke advocated for when the district recently applied for additional slots from the state-funded PreK program. This, among other things, was a key strategy she gained during her enrollment in a P-3 leadership program offered by a local university; the central office provides funds for all of the district's elementary principals to attend the 10-month program and also pays for community-based early learning providers to enroll. Five years ago, the central office expanded full-day Kindergarten for all students in all schools, even though the state did provide funds to cover the costs.

For the past several years, Anne has conducted surveys of parents and identified the handful of community-based child care centers and preschools that her Kindergarteners usually attended in the year prior to enrolling at her school. Burke established and supports a professional learning community (PLC) with the PreK teachers in those programs, and, together, they plan and host no fewer than seven transition-to-Kindergarten opportunities for children and their families, including an open house night, a week-long Jump Start program, and home visits. Having gone through the state-provided training on the Kindergarten Entry Assessment, Burke works as a close team member with her Kindergarten teachers, spending time looking at each child's individual profile – as well as school, district, and state averages – to understand how they can better support and engage each child's strengths and bolster their own efforts to increase the learning opportunities provided.

Feeling pressure from parents, the central office, and the state department of education to increase student achievement, Burke engaged in deep strategic planning with all of her teachers to co-create the school's improvement plan. Together, they set three major goals: (1) to provide meaningful, rigorous, and developmentally appropriate early learning opportunities to every child, beginning in preschool and extending through second grade; (2) to make every family feel welcome and engaged as their children's first and most important teachers; and (3) to ensure that every child, in every classroom, every day is engaged in standards-based learning. Although Common Core State Standards are the school's "north star," Anne recognized that they only provide end-of-year goals and that she needed to introduce the state's birth-through-age-8 early learning guidelines to teachers in order to emphasize the importance of developmental pathways that support students' acquisition of standards.

Comparing the Two Vignettes

Though both fictional accounts, these two vignettes highlight how system-level strategies can influence a single school's efforts. While both Joaquin and Anne were dedicated to the success of their students, Anne was immersed in a school community, a district, and a state that provided rich, systemic supports. The state created aligned birth-through-8 learning standards and provided meaningful training and professional learning opportunities around the KEA that included not just teachers, but also principals, and ensured participants learned how to pull classroom- and child-level data reports in order to understand the nuances of achievement patterns and provide differentiated supports. Anne and her district leveraged these state resources to support their own comprehensive efforts. A local institution of higher education engaged in bolstering the professional knowledge and leadership capabilities of principals and early learning administrators, and the district central office invested in ensuring that school leaders gained from that opportunity. The district made PreK a visible priority by colocating classrooms in its schools. Anne is certainly a motivated and team-oriented leader who recognizes that she needs to not only build collegiality and teamwork among her own teachers but also to engage with PreK teachers and programs in the community.

Policy Context for System-Level P-3 Alignment

The kinds of system-level alignment efforts that provide the background for Anne Burke's story – those that span both ECE and elementary schools – have a long, albeit notably understated history (Reynolds, Magnuson, & Ou, 2010). This history includes the urban Chicago Child-Parent Centers launched in the late 1960s to provide comprehensive education supports to children from preschool through third grade (Reynolds, 2003), as well as the federal Project Follow Through (Kennedy, 1978) and Project Developmental Continuity (Bond, 1982) initiatives of the 1970s that connected Head Start with elementary schools. More recently, community schools have intentionally integrated early childhood programming and services into elementary schools in order to deliberately improve the quality and continuity of practice across early childhood and community school settings (Geiser, Horwitz, & Gerstein, 2013; Geiser, Rollins, Gerstein, & Blank, 2013; Jacobson, Jacobson, & Blank, 2012), and an increasing number of states, school districts, and communities engage in their own alignment efforts (e.g., see Kirp, 2013; Maeroff, 2006; Marietta, 2010; Nyhan, 2013; Reynolds et al., 2017; Ritchie & Gutmann, 2014; Sullivan-Dudzic, Gearns, & Leavell, 2010). Over the past three decades, this system-level alignment work has been fueled by federal, state, district, and municipal policymakers' attention to school readiness and achievement gaps.

The press for school readiness has roots in the National Education Goals Panel which, in 1991, deemed the country's Goal One to be that "by the year 2000, all

children in America will start school ready to learn" (National Education Goals Panel, 1991). With this ambitious proclamation, the Panel invigorated a national movement to build high-quality systems of early care and education for children prior to their entry to Kindergarten (Kagan & Kauerz, 2012). This school readiness narrative, coupled with mainstreamed attention to young children's brain development, provides the backdrop for the extensive investments made by the federal and state governments, as well as school districts and municipalities, to increase children's access to formal programs in the years just prior to entering Kindergarten (PreK for 3- and 4-year olds). By 2015, 42 states plus the District of Columbia had established state-funded PreK programs (Barnett et al., 2016). In addition, the number of Head Start slots for 3- and 4-year olds increased by 103% between 1990 and 2013 (National Kids Count, 2017). These programs have been bolstered by extensive evidence of the efficacy of high-quality PreK in producing positive child outcomes during the period that children are enrolled (Barnett, 1995; Gilliam & Zigler, 2000; Magnuson, Meyers, Ruhm, & Waldfogel, 2005; National Research Council, 2001; Phillips et al., 2017). In terms of achieving the goal of school readiness, evidence points to some, albeit limited, success. In their comparative analyses of nationally representative data from 1998 to 2010 cohorts of the Early Childhood Longitudinal Study – Kindergarten (ECLS-K), Bassok and Latham (2017) found that children entering Kindergarten in 2010 were more proficient across a variety of math and literacy skills than were their 1998 counterparts.

A second major policy focus was invigorated by the National Education Goals Panel in 1991: a press to use national student assessment data to measure both students' and states' progress toward national standards (Vinovskis, 1998). In 2001, the federal No Child Left Behind Act mandated that students complete standardized assessment tests and that states disaggregate those scores by race, ethnicity, family income, disability status, and gender. With the first assessments being administered in third grade, this legislation drew states' attention to achievement gaps. The National Assessment of Educational Progress (NAEP), commonly known as "the nation's report card," reveals a sobering look at the country's overall progress. In 2015, the average NAEP reading score for fourth-grade students eligible for the National School Lunch Program was 28 points lower than the average score for their higher-income peers; this achievement gap is the same as it was in 2003, when NAEP began monitoring scores based on students' socioeconomic status (National Center for Education Statistics, 2015). Similarly, the 24-point score gap between the average reading scores of White and Hispanic fourth-grade students in 2015 did not differ substantially in comparison to 1992, when the assessment was first administered.

Bringing together these two major policy trends – widespread attention to school readiness and achievement gaps – creates a troublesome storyline for early childhood advocates and policymakers alike. Despite the school readiness gains described previously, research shows that the short-term gains made by some children during the Pre-Kindergarten year "fade out" when measured just 1 or 2 years later when children are in elementary school (Currie & Thomas, 2000; Lee, Brooks-Gunn, Schnur, & Liaw, 1990; Lee & Loeb, 1995; Magnuson et al., 2005; US Department

of Health and Human Services & Administration for Children and Families, 2010). In addition, the achievement gaps that exist at school entry persist across elementary school (Reardon, 2011). In short, despite expanded attention to ECE, vast disparities exist throughout elementary school and beyond.

Together, the missed opportunities to sustain gains made when children attend high-quality PreK programs point to the need to rethink the current approach to children's learning experiences. One visionary solution proffered by scholars, policy influencers, and practitioners alike is system-level P-3 alignment as a means to ensure that children receive high-quality preschool opportunities, enter elementary school with the skills and behaviors needed to succeed, and sustain and grow their skills during the primary grades, so that achievement gaps are reduced by third grade (Bogard & Takanishi, 2005; Childress, Doyle, & Thomas, 2009; Kauerz, 2006; McCormick, Hsueh, Weiland, & Bangser, 2017).

P-3 Alignment: Connecting Research and Practice

If system-level alignment is the solution, then what, specifically, are the problems addressed by P-3 alignment? And, in accordance with recent attention to ensuring that research is relevant to children's actual experiences (Gutierrez & Penuel, 2014), what are the problems *in practice* that can be addressed by system-level alignment? There are at least three research-based rationales for system-level alignment and how it positively impacts children's experiences – dosage, developmental duration, and differentiation. Each of these is discussed next.

Dosage: "How Much" Opportunity Children Are Afforded

First, there exists the problem that children, especially those who live in families with low incomes and of specific racial and ethnic backgrounds, are not provided a sufficient quantity (or quality) of learning opportunities (Duncan & Murnane, 2011). While some policy efforts, like Universal PreK for 4-year-olds, are targeted to benefit these children, often, these singular, "silver bullet" approaches to reform are insufficient to counter the vast inequalities that persist for some children (Duncan & Murnane, 2014). To address this, system-level alignment approaches attend to issues of dosage and cumulative participation (Zaslow et al., 2010), underscoring the premise that a single-year intervention is inadequate to ensure children's ongoing success in school and life. Instead, each year of high-quality early learning experience should be followed by another year. At a simplistic level, children need a strong dose of high-quality learning opportunities that begin early and continue year after year. System-level alignment strategies bring explicit focus to the *continuum* of learning, as opposed to only 1 year (e.g., Universal PreK) or to one transition point (e.g., PreK to Kindergarten).

For example, evidence from both experimental and nonexperimental studies suggests that more participation in center-based ECE is associated with stronger cognitive outcomes, especially for low-income children (National Research Council, 2001). Similarly, research indicates that 2 years of preschool are more beneficial than 1 (Arteaga, Humpage, Reynolds, & Temple, 2014; Reynolds, 1995). Dosage is most often used to argue for providing quality learning opportunities well before Kindergarten, including PreK, preschool, and home visitation. There is emerging consensus that the quantity and quality of literacy and math instruction, coupled with the quality of emotional interactions in elementary school classrooms, have long-term impact on children's achievement (Phillips et al., 2017; Pianta, Belsky, Vandergrift, Houts, & Morrison, 2008). Consequently, from a P-3 perspective, the concept of dosage is extended to argue that interventions that begin in the preschool years should be followed by high-quality learning experiences in the primary grades (Kauerz, 2013; Reynolds, 2003). System-level alignment efforts are predicated on the belief that there should be simultaneous and equal efforts to both provide high-quality programs to children in the years before Kindergarten and improve the quality of education provided in Kindergarten and first, second, and third grades.

Developmental Duration: Ensuring a Ladder of Learning

Second, there exists the problem of rickety, misaligned instruction across the P-3 continuum, whereby children's experiences from teacher to teacher, classroom to classroom, and year to year do not match developmental pathways (Kauerz, 2006). For example, field-based evidence highlights that when children experience Kindergarten instruction that is the same as what they experienced in preschool, they do not exhibit learning gains (Engel, Claessens, & Finch, 2013; Engel, Claessens, Watts, & Farkas, 2016). Similarly, research shows that for children who attend two consecutive years of preschool, the actual learning experiences within those years make a difference in children's outcomes. Findings show that if children enrolled in Head Start as both 3- and 4-year-olds receive more of the same activities in both years, rather than increasingly complex, differentiated learning experiences, children gain less from their second year in the program than if they switched to a more academic PreK program at age 4 (Jenkins, Farkas, Duncan, Burchinal, & Vandell, 2016; Reynolds, 1995). These conclusions clearly point to the importance of minimizing repetition during the years prior to Kindergarten, and those findings can be extrapolated to hold true for the primary grades, K-3. The value of connecting concepts, skills, and learning approaches introduced in one grade to what children learned in the previous grade and to what will be learned in the following grade is a core tenet of P-3 approaches (Stipek, Clements, Coburn, Franke, & Farran, 2017).

As such, a second rationale for system-level P-3 alignment – developmental duration – extends the concept of dosage by emphasizing that children should not receive the same curricular content and learning experiences 1 year after another but developmentally progressive content year after year. At its most basic level,

developmental duration recognizes that the content and organization of knowledge, over time, matter (Goldman & Pellegrino, 2015; Stipek et al., 2017). In early childhood literature, this concept is encompassed within developmentally appropriate practice (DAP; Copple & Bredekamp, 2009), which fundamentally recognizes that deep knowledge and understanding of how children develop and learn are imperative to ensuring that children receive learning opportunities that meet children where they are and support them to achieve at ever-higher levels. To accomplish this, children's learning must be viewed from a broad perspective that understands and values the developmental trajectories that exist within all domains of children's development and learning, from birth through age 8. From a practical standpoint, this suggests the importance of organizing instruction not only within grade levels but, more importantly, across grade levels so that it moves children along typical and, in some content areas, well-documented pathways or sequences of acquiring abilities, skills, and knowledge. To organize standards, curriculum, and assessments in this manner requires system-level alignment effort.

Differentiation: Ensuring Adults Adapt Their Practice to Benefit Children

Third, and another source of misaligned instruction, is the problem of discrepant teacher beliefs and attitudes, both within and across grade levels, about student abilities and instructional strategies (Abry, Latham, Bassok, & LoCasale-Crouch, 2015; Connor et al., 2009; Engel et al., 2013; Swain, Springer, & Hofer, 2015). For example, one study reported that children taught by preschool and Kindergarten teachers whose beliefs were not aligned about the relative importance of academic and social skills received lower ratings for their social skills and approaches to learning and had lower math achievement than children taught by preschool and Kindergarten teachers whose beliefs were more in accordance with one another (Abry et al., 2015). This evidence suggests that teachers' beliefs and attitudes can be closely linked to their ability and willingness to individualize instruction for children. Because the rate and pattern of each child's learning is unique, a group of children of the same chronological age may have widely variable developmental abilities, even though the children are all progressing along the same mostly predictable sequences of growth and change. Further, because children's learning trajectories are somewhat messy and vary from child to child, it is important that teachers and other caregivers be able to differentiate instruction for each child in order to ensure he or she receives content and experiences that support his or her individual and unique stage of development. In other words, a teacher with a classroom full of 4-year-olds will not only need to be familiar with learning sequences that both precede and follow the chronological age of four but also need to be comfortable, confident, and prepared to provide different contents and instructional strategies to children within the same class.

Differentiation requires that teachers and caregivers hold high expectations for and challenge each child to achieve at a level just beyond his or her current mastery

(Copple & Bredekamp, 2009). To target learning experiences that are neither too simplistic nor too advanced for each child requires sophisticated skill from teachers. It also requires that teachers invest time to truly understand each child's strengths, needs, and challenges. However, it is widely recognized that ECE and K-12 teachers and administrators have vastly different preparation pathways, in-service professional development opportunities, compensation packages, professional associations, and job security (Institute of Medicine and National Research Council, 2015), all of which contribute to discrepant beliefs, attitudes, and dispositions between teachers in ECE and K-3. System-level alignment efforts tackle these problems.

Together, dosage, developmental duration, and differentiation provide sturdy theoretical grounding for what children need to experience between birth and third grade and the practical problems that system-level alignment can address. Ultimately, comprehensive P-3 approaches hold the potential to improve child outcomes and, theoretically, to close or altogether prevent achievement gaps between subpopulations of children. Realizing these in practice, however, requires that teachers and other caregivers deliver them consistently and effectively. Accomplishing this across the various classrooms, programs, and schools in which children learn requires explicit and strategic attention to increasing the kinds of alignment and the strengths of alignment between organizations and systems. I turn next to discussing key dimensions of system-level alignment.

Dimensions of System-Level Alignment

P-3 approaches aim to reform the ECE and K-12 systems and bring greater alignment and coherence across teachers, classrooms, schools, organizations, and systems. Simple in concept, this is challenging in practice. For example, challenges have been documented related to conflict around sharing resources when PreK is colocated at a public school (e.g., library and playground), building mutual understanding and respect between early learning and elementary school staff, dealing with salary inequities between preschool and elementary teachers, and protecting preschool from the negative aspects of the K-12 accountability environment (Desimone, Payne, Fedoravicius, Henrich, & Finn-Stevenson, 2004; Halpern, 2013; Wilinski, 2017). Tackling these challenges requires thinking about and focusing on alignment in different ways. In this section, I address three fundamental dimensions of P-3 alignment: paradigmatic, structural, and implementation.

Paradigmatic Alignment

ECE and K-12 have vastly different histories and, as social institutions, varied theoretical grounds and competing paradigms. At a practical level, these paradigmatic differences have far-reaching influence on teacher and administrator qualification requirements, organizational priorities and investments, accountability measures, approaches to child/

student assessment, data systems, and more. Often unacknowledged and unaddressed, the currents of these differences are rooted in competing notions of children's inner nature and potential and how best to educate them (Fuller, 2007).

Some of the earliest philosophers of the early childhood field in the eighteenth century, Jean-Jacques Rousseau and Johann Heinrich Pestalozzi, declared that the goal of early education was to preserve the natural state of the child through play and encouragement of children's innate curiosities. Developmentalists who built on these liberal-humanist traditions, including education scholars such as Friedrich Froebel and Lev Vygotsky, established early learning approaches that emphasize whole child development, play-based learning, and child-initiated exploration. The emergence and development of modern government-sponsored early learning programs in the United States have followed the general trajectory of social services, focusing on children's needs and providing support only when families fall short (Kagan, Cohen, & Neuman, 1996). For example, historically, the nation's child care policies and programs were created to protect the health and safety of children while simultaneously supporting the needs of working families. Head Start was designed in the 1960s as an aspect of President Lyndon B. Johnson's War on Poverty to meet the social service and educational needs of a targeted group of young children, those living at or below the federal poverty line. The burgeoning growth of state-funded PreK programs since the 1990s represents an important shift in the early learning field from being heavily anchored in social services (both child care and Head Start are housed in the federal Department of Health and Human Services) to beginning to favor "educationalization" of the preschool years (Kagan & Kauerz, 2007).

Inherent to all early learning programs is a dedication to developmentally appropriate practice (File & Gullo, 2002; Smith, 1997), child-centered learning (Brown, 2009), and a core value of including and supporting children's families. Early learning programs emphasize the uniqueness of each child and focus on teaching the whole child, ensuring that social, emotional, physical, and cognitive development are addressed. Assessment is usually informal and accomplished via observation and recording individual children's behaviors in natural, play-based environments.

In contrast, the development of the modern American K-12 education system evolved from the Common School movement of the early nineteenth century and educator-philosophers such as Horace Mann who viewed public schools as an instrument to unify society by providing didactic, skill-based instruction in schoolhouses as institutions through which "norms and ways of surviving in the new industrial society would be conveyed" (Kliebard, 1995, p. 1). Rooted in institutional liberalism, public education relied heavily on universal, government-provided approaches to children's learning. The late nineteenth century witnessed the professionalization of teachers, and the twentieth century emphasized accountability and the increasing power of standardized learning (Spring, 2001). This subtext of common, standards-based sets of knowledge became especially pronounced in 1994 when Congress passed the Goals 2000: Educate America Act, which called for the setting of challenging standards – both content and performance – in academic subject areas and assessments. The K-12 system focuses on teaching explicit academic skills and competencies that are delineated into specific content areas of learning

(e.g., literacy/reading, math, science, social studies). The federal No Child Left Behind Act of 2001 extended this standards-based framework by requiring states to set standards for "highly qualified teachers" and to formalize methods of assessing student performance. The state-led creation and widespread adoption of Common Core State Standards that began in 2009 include College and Career Readiness standards that, in turn, were back-mapped to create ambitious standards that start in Kindergarten and emphasize English language arts and math. The K-12 system employs formal, summative assessments that measure mastery of limited forms of content knowledge and that are administered in prescribed and controlled environments and timelines (Goldman & Pellegrino, 2015). Assessments use valid and reliable measures that are norm-referenced and group-administered.

The contrast between the underlying paradigms of ECE and K-12 is stark. One way to characterize the dichotomy is the difference between prioritizing the teaching of children and the teaching of content (Kagan & Kauerz, 2006). In one, the child holds primacy; in the other, professionals and institutions do. Indeed, as some argue, P-3 alignment is like colliding worlds and "the merger thrusts the tensions between public and private, system and nonsystem, caregiving and education, and home versus institutional care into the forefront like no other current policy issue of our time" (McCabe & Sipple, 2011, p. e2). The different perspectives reflect distinctly competing assumptions about the purposes of their services, whom they serve, and who is responsible for providing, funding, and governing them. To effectively work across ECE and K-12, these differences must be acknowledged and negotiated. Research suggests that creating and maintaining collective decision-making structures and processes is important to creating coherence and attaining joint goals (Honig & Hatch, 2004; Thomson & Perry, 2006). As such, system alignment strategies could include collaborative leadership teams, shared professional learning opportunities, and public awareness efforts.

Structural Alignment

The different paradigms of the ECE and K-12 systems are reflected in the policy realm, where organizations and governance are siloed. At best, both ECE and K-12 are loosely coupled systems (Weick, 1976) in and of themselves, meaning that their component parts are related and somewhat responsive to one another, yet also preserve their own identity and logical separateness. For example, because of the multiplicity of programs within it (e.g., child care, Head Start, state-funded PreK, informal care), the ECE system has been termed a "nonsystem" (Kagan & Kauerz, 2009). Similarly, the K-12 system is a behemoth system of nearly 14,000 independently governed local school districts across the country. While the federal, state, and local governments all play varying roles in both ECE and K-12, the governing of these independent "systems" is complex and disjointed. The challenges faced by stakeholders who strive to establish comprehensive P-3 approaches, by aligning the two systems, are amplified exponentially by the different governing structures.

The various sectors within ECE and the K-12 system are situated differently in government and, therefore, are linked to different governing bodies and procedures, financing mechanisms, standards (for children, teachers, administrators, facilities), rules, regulations, and accountability structures. Some programs are largely governed at the federal level (e.g., Head Start), while others are largely governed at the local level (e.g., K-12 school districts). State governments play variable roles, too, providing primary leadership in some programs (e.g., state-funded PreK, child care) and marginal, if any, leadership in others (e.g., Head Start). The siloed structures influence more than organization-level variables; they also affect teachers and children at the level of practice. Of particular note are wage and benefits discrepancies between teachers employed by school districts and child care providers (McCabe & Sipple, 2011; Whitebook, 2014).

Structural and regulatory contradictions can also negatively affect access when, for example, different standards for facilities prohibit school districts from being able to provide space for preschool programs. For example, state regulations for PreK may require a specific amount of square footage per child or a particular distance to access toilet facilities. If an elementary school has available space and the desire to house a PreK classroom, yet cannot adhere to the PreK licensing requirements, they may not be able to do so. Even within the ECE system, when comparing formal and informal arrangements, there are stark differences in regulations and funding streams, and, as a result, there are large differences in quality (Bassok, Greenberg, Fitzpatrick, & Loeb, 2016).

In sum, aligning structural elements of ECE and K-12 is a complex policy problem that involves multiple levels of government and a complex web of stakeholders. System-level alignment efforts can tackle these structural barriers by creating common standards and regulations – for both programs and professionals. System-level efforts also focus on shared governance, data systems, and flexibility in funding streams and mechanisms (Kagan & Gomez, 2015; Kagan & Kauerz, 2012).

Implementation Alignment

The promise of system-level alignment resides in the day-to-day experiences of young children in hundreds of thousands of classrooms and programs. School districts and communities all across the country are engaged in this work, striving to improve the quality and coherence of children's learning opportunities and bringing together ECE and K-12. While implementation varies from site to site, based on local context, comprehensive P-3 approaches share common strategies for increasing alignment and coherence across ECE and K-12. These strategies fall into eight categories (Kauerz & Coffman, 2013): (a) cross-sector work, (b) administrator effectiveness, (c) teacher effectiveness, (d) instructional tools, (e) learning environments, (f) data-driven improvement, (g) engaged families, and (h) continuity and pathways. Here, I highlight just a few of these categories, discussing how they might be addressed in practice, at the level of implementation.

Cross-Sector Work As already described at length, comprehensive P-3 approaches require, at minimum, that the traditionally disparate sectors of ECE (no matter how narrowly or broadly defined) and K-12 work together; cross-sector collaboration is a fundamental necessity. At the implementation level, this means that elementary schools and community-based ECE programs work together, creating formal linkages. These linkages might include school-community P-3 leadership teams or committees that have formalized decision-making processes, jointly developed strategic plans, and modest amounts of money to support collaboration. For example, a local P-3 cross-sector leadership team might involve one or more elementary school principals, the directors or lead teachers from community-based child care centers within geographic proximity to those elementary schools (feeder programs), the director of the nearby Head Start program, and other stakeholders with early learning expertise. When this collaborative team meets, they discuss shared priorities, plan joint professional development for teachers, consider the diversity of families who live in their community, and strategize how to meaningfully engage them. Most importantly, this leadership team takes action together, not as separate entities.

Administrator Effectiveness The literature on K-12 leadership shows that of all in-school factors influencing student achievement, principals have the most influence second only to teachers in impacting student outcomes (Leithwood, Louis, Anderson, & Wahlstrom, 2004); a similar finding exists for administrators in the ECE system (Rohacek, Adams, & Kisker, 2010). Increasingly, researchers and practitioners alike recognize that elementary school principals and ECE administrators must possess knowledge, skills, and dispositions that are unique to the P-3 continuum (Abel, Talan, Pollitt, & Bornfreund, 2016; National Association of Elementary School Principals, 2014; Pacchiano, Klein, & Hawley, 2016). For example, rather than generic approaches to organizational management, P-3 administrators must be well equipped to navigate and engage in the kinds of cross-sector collaborations just described. Similarly, rather than generic approaches to instructional leadership, P-3 administrators must be highly versed in child development and the specific teaching and learning strategies that are most appropriate for young learners.

At the level of implementation, school principals, directors of early learning programs, and other administrators play important roles in building visible support for alignment efforts, providing adequate resources, and helping to direct the work. This could manifest as explicitly discussing their P-3 efforts during staff meetings, in family newsletters, and on web sites. These administrators will also seek ways to expand and improve their knowledge base and skill set. The second vignette that opened this chapter highlighted multiple (albeit hypothetical) ways that Anne Burke actively developed her leadership skills around improving learning opportunities for young children.

Teacher Effectiveness Teachers are the adults who, ultimately, deliver the dosage, developmental duration, and differentiation explored earlier in this chapter. While preservice preparation, degree attainment, and compensation and benefits are crucial to transforming the birth-through-age-8 teaching workforce (Institute of

Medicine and National Research Council, 2015), these are largely beyond the direct influence of local schools and communities. In order to ensure that teachers across P-3 are actively dedicated to providing high-quality instruction and effective learning experiences for all children, they need ongoing professional development that is grounded in child development and focused on effective instructional practices. They also need ample opportunity to make their own practice visible to other teachers, observing each other's classrooms in order to identify and share effective teaching strategies.

Further, teachers need to be provided opportunities and support to work as teams – both horizontally (within the same age/grade level) and vertically (across age/grade levels). Teamwork provides time and space to engage with peers to assess, reflect on, and improve their own teaching practices. In and of themselves, these actions are not unique to either ECE or K-12. However, in reality, most training, professional development, professional learning communities and other team-based endeavors, and professional affiliations are provided in siloes – ECE has their efforts and K-12 has theirs (Whitebook, 2014). Bridging these siloes is a challenge in practice, with some studies highlighting uncertainties about how much preschool and elementary teachers should be in each other's daily affairs, including things such as faculty meetings and curriculum planning (Desimone et al., 2004). Thus, comprehensive P-3 approaches bring explicit and sustained attention to aligning teachers' paradigms in order to increase their buy-in to collaborating with other teachers not in their usual sphere, as well as to aligning their day-to-day structures and practices.

Instructional Tools When considering the range of ECE and K-3 classrooms in which children play and learn, there exists a wide range of standards, curricula, and assessments that teachers use to structure children's experiences. ECE teachers may adhere to their state's early learning guidelines (if they know about them at all), while K-3 teachers likely adhere to Common Core State Standards. The literacy curriculum used in PreK may be entirely different from that used in Kindergarten. In accordance with the research-based rationales alignment presented earlier in this chapter – dosage, developmental duration, and differentiation – P-3 approaches should strive to use standards that address all domains of children's development (i.e., physical, cognitive, social-emotional, approaches to learning) and to identify and implement curricula that reflect children's holistic development. Common curricula that have been designed to be developmentally progressive should be shared across ECE and K-3. Because curricula are often selected locally, school-by-school, and program-by-program, if not classroom-by-classroom, practitioners have great opportunity to influence P-3 alignment.

These categories of implementation-level P-3 alignment strategies, and the others not addressed here, do not stand in isolation from one another. Indeed, there is substantial overlap and entwinement among them. For example, in practice, it is impossible to separate instructional tools from teacher effectiveness or to separate the important role of administrators from cross-sector work. This framework of eight strategies (Kauerz & Coffman, 2013), though, provides a foundation of content, pro-

cess, and norms for professional collaboration within and across age and grade levels, from birth through elementary school. When enacted with depth and fidelity, these strategies can establish visions of high-quality, developmentally based learning for young children that are shared among ECE and elementary school settings.

But Does It Work? Outcomes of System-Level Alignment

While there is limited empirical research that addresses the longitudinal child-level benefits of P-3 approaches, some compelling evidence exists. First, detailed in the book, *Leading for Equity*, the story of how Montgomery County Public Schools (MCPS) tackled achievement gaps is remarkable (Childress et al., 2009). The district created an Early Success Performance Plan for the PreK-third grades that included aligned reading, writing, and math curriculum, ongoing district-designed diagnostic and formative assessments at each age/grade level, extensive professional development for teachers, a prioritized focus on full-day Kindergarten and smaller class size for the district's most at-risk students, and both summer advancement and after-school programs for struggling elementary students. With a sustained focus on these efforts over the course of more than a decade, MCPS's black-white achievement gap narrowed by 29 percentage points between 2003 and 2009.

Second, in the Chicago Child-Parent Centers – a Chicago Public Schools' effort that provided comprehensive aligned services to children beginning in preschool (age 3) and extending through third grade – children who enrolled at age 3 and remained in the intentionally aligned elementary schools through second or third grade outperformed their peers who had less extensive participation (e.g., were enrolled for only 1–3 years). Not only did the children who had an intentionally aligned PreK-third grade experience outperform their peers on achievement tests in third grade and seventh grade, but they also had fewer grade retentions by age 15 and fewer special education placements by age 18 (Reynolds et al., 2010, 2017; Reynolds, Magnuson, & Ou, 2006). These Centers adhered to many of the system-level alignment strategies detailed in this chapter; for example, they built collaborative leadership teams, shared professional development across grade levels, and aligned curriculum and instructional strategies.

Although the current evidence is limited, there has been a recent federal effort to invest in longitudinal studies of P-3 alignment (e.g., see McCormick et al., 2017) that will provide important heft to the research base. In addition to studies like these that follow children over time, it will be important for researchers to also expand the use of human cognition theories and methodologies to increase the field's understanding of the influence of system-level alignment on practitioners' and policymakers' paradigmatic shifts. Further, there should be increased attention to political and organizational theories and methodologies to increase understanding of how system-level alignment efforts influence the structures and boundaries of the traditionally disparate ECE and K-12 systems.

Future Directions

New research directions, as just described, are only one promising avenue to expand and enrich system-level alignment efforts across ECE and K-12. One primary takeaway from this chapter is that system-level alignment relies on linkages and collaboration. This work cannot be isolated to just the realm of research. It also cannot be isolated to just one teacher, one classroom, one grade level, one curriculum, or one school. Revisiting the vignettes that opened this chapter, the field is replete with principals who resemble the experiences and expertise of Joaquin Enfield and the experiences and expertise of Anne Burke. Similarly, the ECE field is filled with administrators who bring a mixture of knowledge, skills, and dispositions that affect their daily routines and relationships. Further, teachers in hundreds of thousands of classrooms – some inside school buildings, others in community-based centers, church basements, and family child care homes – devote their energies to young children's well-being and development. Practitioners like them must be engaged in efforts alongside researchers to learn from and with one another. System work requires working at the intersection of practice, research, and policy.

Finally, although this chapter has focused primarily on alignment between preschool programs and the K-12 system, more alignment is also needed down the developmental continuum, between infant/toddler programs and preschool efforts (Markowitz, Bassok, & Hamre, 2017). Similarly, children do not stop developing or learning at third grade; more alignment efforts up the continuum, between elementary and middle school years, are also warranted. What makes P-3 system-alignment unique, however, is the necessity of bridging the ECE and K-12 worlds in both theory and practice. The vision for this work is to improve not just children's transition to Kindergarten but to improve their long-term outcomes in school and in life.

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