Overdeck Family Foundation

The Road to Readiness

The Precursors and Practices that Predict School Readiness and Later School Success

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OVERVIEW

School readiness is foundational to later success, both inside and outside the classroom. Children who begin school with certain skills and competencies are more likely than their peers to experience later academic success, attain higher levels of education, and secure well-paid employment. These early skills and competencies are frequently grouped into four domains, which are referred to in this review as Early Academic Building Blocks, Executive Function, Social-Emotional Functioning, and Physical Well-Being.

However**, research suggests a substantial portion of children arrive at kindergarten without the skills to take full advantage of early curricula and learning opportunities.** Addressing this reality depends on identifying the precursors and practices that can be used to support and monitor the development of school readiness. As such, this review examines the landscape of school readiness literature to address three questions:

1. **Which domain(s) of school readiness are most predictive of future success?**
2. **Which precursors of school readiness show strong predictive value at each developmental stage?**
3. **Which parenting practices show strong influence on selected child outcomes?**

In doing so, this review summarizes and reports trends in the literature on early childhood, child development, and school readiness. In particular, this report comes to the following conclusions:

Which domain is most predictive of future success?

- All domains are important. Growth within one domain can be associated with growth in another domain, signaling that domains grow together.
- Early Academic Building Blocks and Executive Function are the domains most frequently and strongly associated with later academic success.
- Language, a sub-domain within Early Academic Building Blocks, may be the strongest predictor of future success.

Which precursors show strong predictive value at each developmental stage?

- Between the ages of 0-3, vocabulary is one of the strongest predictors within the language sub-domain.
- Between the ages of 3-5, vocabulary, phonological awareness, and letter knowledge are some of the strongest language predictors.
- Executive Function precursors are interrelated, growing together and building on each other throughout early childhood. They are considered equally predictive.

Which parenting practice show strong influence?

- Parenting practices that show strong influence on a child's school readiness can be grouped into two categories: responsive parenting and supportive home learning environment.

Defining & Measuring School Readiness

School readiness refers to the holistic set of skills and knowledge a child needs to function successfully in school. These skills are frequently grouped into four domains, which are referred to in this review as Early Academic Building Blocks, Executive Function, Social-Emotional Functioning, and Physical Well-Being.

Early Academic Building Blocks are the academic skills young children need for subsequent academic success. These include cognitive development, language, emergent literacy, and early mathematical development.

Executive Function includes cognitive flexibility, working memory, task persistence, and self-control. The development of these skills begins in infancy as babies learn to self-soothe and continues as children learn to persist at difficult tasks and follow instructions.

Social-Emotional Functioning refers to the skills children use to understand, express, and manage their emotions and behaviors in social settings. When they enter kindergarten, children learn in contexts that ask them to work productively with adults and classmates. The social nature of learning requires young children to enter kindergarten with a foundation of pro-social behaviors and skills, including empathizing, sharing, and playing collaboratively.

Physical Well-Being refers to all aspects of a child's physical health and functioning, most notably proper nutrition, adequate sleep, developing fine & gross motor skills, a healthy birth weight, and the absence of stress and adversity. Physical Well-Being also depends upon early visits with health care professionals like doctors and dentists.

Each domain is necessary, but not sufficient to characterize a child as school ready. Ensuring all children enter kindergarten ready to learn means supporting basic skills development in each of the four domains. Readiness also extends beyond the child: schools, teachers, and systems must be ready for children, creating environments where children can thrive. This review synthesizes literature on child outcomes and parent practices. It does not focus on the systems and contexts of school readiness.

Long-term Implications of School Readiness

Research suggests a substantial portion of children arrive at kindergarten not ready to take full advantage of school learning opportunities.[1] According to a large national survey, 58% of children ages 3-5 are not 'on-track' to start kindergarten with the requisite skills or capacities in at least one domain.[2] This includes:

- **42%** not on-track according to assessments of *Early Academic Building Blocks*
- **22%** not on-track according to assessments of *Executive Function*
- **18%** not on-track according to assessments of *Social-Emotional Functioning*
- **14%** not on-track according to assessments of *Physical Well-Being*

[1] Pianta, Cox, & Snow, 2007
[2] Child Trends, 2019

The implications of school readiness extend beyond kindergarten and into adulthood.[3] **A five-year old child who performs better on school readiness assessments tends to experience more academic success in grade school and is less likely to drop out of high school.[4]**

This in turn has cascading influences on adulthood, including labor market participation. Entering school kindergarten-ready increases chances of reaching middle class status by age 40 by roughly 8 percentage points.[5] Early educational attainment has also been linked to long-term health outcomes, including lower rates of chronic disease, decreased prevalence of disabilities, and a decreased likelihood of engaging in risk behaviors.[6]

Additional Factors Influencing School Readiness

Child learning and growth takes place within environments composed of different social, economic, and healthcare systems. These systems exert an incredible influence over child development. They can serve as protective buffers, aiding the development of healthy, happy, and school-ready children. They can also disadvantage children and families, posing significant barriers on the road to school readiness. For example, decades of research establish the impact growing up in poverty can have on a child's academic achievement.[7] Poverty is associated with adversity, stress, and lack of adequate health care, which can negatively impact child outcomes from birth. Environments of poverty are associated with adverse birth outcomes, like low birth weight and poor infant health, which can have a significant impact on subsequent developmental processes.

The effects of these early environments ripple throughout childhood, with implications for the rest of a child's life. Only 48% of children in low-income households are ready for school at age five, compared to 75% of their peers from moderate and high-income households.[8] Longitudinal data suggests these early gaps in academic readiness persist and magnify as children progress through school, contributing to inequalities in academic achievement, health care, and employment opportunities.[9] These gaps in school readiness are early contributors to the opportunity gap that forms between children from low-income households and neighborhoods, and their less-advantaged peers.

There is also abundant evidence that teachers and educational researchers carry cultural biases into their assessments of children.[10] While the census estimates over half of all U.S. babies are non-white, roughly 80% of teachers are white. This growing cultural, ethnic, and racial diversity is an important part of the conversation on school readiness, as is the cultural sensitivity of school readiness assessments.

Although social, cultural, and economic environments are important and influential contexts of school readiness, a full discussion of the role they play is beyond the scope of this paper. This review is primarily focused on child outcomes and parent practices that influence school readiness.

[3] Garcia & Weiss, 2017
[4] Duncan et al., 2007
[5] Winship, Sawhill and Gold, 2011
[6] Fiscella & Kitzman, 2009
[7] Lacour & Tissington, 2011; Solano and Weyer, 2017
[8] Isaacs, Brookings, 2012
[9] Huffman et al. 2001
[10] Padilla, 2001

SCANNING THE LITERATURE

This review focuses on delineating factors in child development and parent practices that pave the way to school readiness. To answer the research questions, this review examined the school readiness literature through studies that link early childhood outcomes and parent inputs to later preschool, kindergarten, and elementary success. The analysis that follows highlights domains and precursors that emerged as strong predictors of later school success. Although this review emphasizes the strongest predictors of school readiness, the intent is not to imply that other domains and precursors are unimportant. A holistically school-ready child relies on skills within each domain to function successfully in school.

We acknowledge that in reporting trends within the literature, we can only capture what the literature tells us. Our findings reflect trends in time, trends in methods, and trends in measures, all of which can be heavily influenced by cultural conceptions, availability of funding, and researcher bias. The predictive value of certain domains, outcomes, or precursors may be underrepresented in the literature, and so not captured within this review.

ANALYSIS AND FINDINGS

Which domain(s) of school readiness are most predictive of future success?

All domains are important to school readiness and later success. Academic success is not the only type of success that matters to school readiness. However, school readiness literature most often assesses success using math or reading achievement scores. As a result, success is defined within this review as academic success, relying heavily on math and reading achievement scores. Surveying the literature on school readiness reveals two domains are particularly predictive of later success: **Early Academic Building Blocks and Executive Function are particularly predictive of later success.** Skills within these domains develop from birth, with later skills building on and growing from earlier competencies.

Within Early Academic Building Blocks, language was found to be the most predictive sub-domain. While math and reading were both found to predict later success, they were not found to be as predictive as language. Math is a widely studied sub-domain of school readiness and early math skills are often cited as predictive of later success. However, there is evidence that language, specifically language related to math, can explain the strength of the relationship between early math and later success. As such, this review focuses primarily on the importance of language. For an expanded discussion on other Early Academic Building Blocks, like math and reading, please see *The Road to Readiness: Expanded Discussion of School Readiness.* This complementary document provides a more thorough overview of the predictive value of school readiness domains, building on the discussion presented here.

The Importance of Early Academic Building Blocks and Executive Function

Language aids the development of other Early Academic Building Block skills.

Early language skills can predict success on later assessments of language, mathematics, and reading.[11] A strong foundation of early language skills enables children's participation in learning opportunities that grow their academic language. **A child's language skills at 30 months can predict seventh-grade academic language proficiency.[12]**

In turn, academic language proficiency predicts later vocabulary skills, reading comprehension, and narrative skills.[13] This suggests **children who arrive at school with stronger early language skills are better able to take advantage of opportunities to develop academic language skills, which is a crucial predictor of success across subjects.**

Language has been linked to executive function.

Language allows children to engage with others in activities that grow their executive function skills. One study found language skills could explain differences in levels of executive function. By age three, children at the 75th percentile of language skills perform higher on measures of executive function than their peers at the 25th percentile of language skills.[14] One potential explanation for this predictive power is that executive function skills increase as children get more practice engaging and participating in learning activities. If language is an important contributor to learning across domains, it may aid children's participation in the same activities that help grow executive function skills.

Young children use language to regulate their emotions.

Language gives children the capacity to express themselves and communicate, setting them up for success in their interactions with others. Language at school entry was found to predict overall social skills across grades one through five.[15] With a certain level of language mastery, children may be better able to harness their skills in executive function and emotional regulation, helping them work collaboratively with peers and adults in the classroom.[16]

Executive function also emerged as a strong predictor of later academic success.

Executive function was found to predict both reading and math achievement.[17] Aspects of executive function such as working memory, attention control, and inhibitory control help a child avoid distractions and persist through the challenges of early schooling.[18] Children who are able to function effectively and collaboratively within the classroom—to effectively remember directions, control their impulses, and pay attention—have been shown to have greater success in school. These skills are crucial to effective engagement with peers, teachers, and academics.

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[11] Barblett & Maloney, 2010
[12] Uccelli et al., 2018
[13] Demir et al., 2015; Dickinson & Tabors, 2001; Rowe, 2012
[14] Vallotton & Ayoub, 2011
[15] VPace et al., 2019
[16] Cole, Armstrong, & Pemberton, 2010
[17] Duncan et al., 2007; Claessens et al., 2009; Welsh et al., 2010
[18] Carlson, Zelazo, & Faja, 2013; Mclelland, et al., 2010
[19] Morrison, Cameron Ponitz, & McClelland, 2010

The Importance of Social-Emotional Functioning and Physical Well-Being.

While all domains are important, the literature on school readiness reveals domains vary in how strongly they predict later school success. Although school readiness literature does not reveal them to be more predictive than Executive Function or language, research does reveal the foundational importance of Social-Emotional Functioning and Physical Well-Being.

Social Emotional Functioning and Executive Function are closely related.

Skills within Social-Emotional Functioning and Executive Function are both central to children's academic learning. Both are believed to help students manage stress, process information, and engage with teachers and peers.[20] Some studies have used 'approaches to learning,' blending certain Social-Emotional and Executive Functioning skills into a single construct. Research reveals that a child's approach to learning, including their attitude towards school, their eagerness to learn, and their task persistence and attentiveness, is a significant predictor of later school success.[21] Executive Function skills may also aid the development of Social-Emotional skills.[22] Research suggests growth in Executive Function skills is associated with subsequent social emotional competence.[23] While Executive Function was more frequently found to be a strong predictor of later school success, the close relationship between Executive Function and Social-Emotional Functioning suggests that both are essential to school readiness.

Social-Emotional Functioning is foundational to school readiness.

Longitudinal studies suggest that early academic achievement is built on a foundation of social-emotional skills.[24] One large national survey revealed teachers frequently use social-emotional measures when judging children to be not school ready. In particular, teachers listed emotional immaturity (86%) and lack of social confidence (80%) as major reasons why a child was not prepared for kindergarten.[25] Another study found programs emphasizing social skill development showed improved child outcomes related to attendance, grades, and academic skills in reading, writing, and math.[26] This research suggests the importance of Social-Emotional Functioning to school readiness.

Research also reveals that Social-Emotional Functioning has important implications for long-term success.

One study found that prosocial skills were significantly predictive of on-time high school graduation and college degree completion.[27] The same study also found that kindergarten prosocial skills could predict stable and full-time young adult employment. This suggests that early Social-Emotional Functioning is critical to both school readiness and long-term success. Emerging research continues to elevate the importance of social-emotional skills to school readiness. As literature elucidates the relationship between social-emotional skills and later school outcomes, we will continue to explore how this domain predicts school readiness. At the present, the school readiness literature reviewed here reveals that while the Social-Emotional domain is not more predictive than Executive Function or language, it is foundational to overall school readiness.

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[20] Blair, 2002; Ursache, Blair, & Raver; Liew, 2012
[21] Smith-Adcock et al., 2019; Grissmer et al., 2011; George and Greenfield 2005; Fantuzzo et al., 2004
[22] Riggs et al., 2006
[23] Hughes et al., 2001; Brophy et al., 2002
[24] Raver, 2002
[25] Boyer, 1991
[26] Zins et al., 2004
[27] Jones, Greenberg, & Crowley, 2015\

Like the Social-Emotional domain, Physical Well-Being is also foundationally important to school readiness.

Sleep and nutrition have both been linked to brain development.[28] A lack of adequate sleep or proper nutrition can impede cognitive development, which is foundational for early learning. Fine motor deficits have been shown to be particularly harmful to a child's success in early classrooms.[29] Researchers found 46% of the kindergarten school day was devoted to fine motor activities, with 42% of those fine motor activities involving using a pencil.[30] Young children who enter school with less automaticity in coordinating motor skills may have greater difficulty processing increasingly complex concepts like letters and numbers.[31]

Which precursors of school readiness have the strongest predictive value at each developmental stage?

While all domains are important, language development and Executive Function were found to be the most predictive of later success. As such, this section outlines precursors within each of those domains that have the strongest predictive value according to the literature. It excludes other domains that also have predictive value and importance, such as early math. Although these are not the only precursors in each domain, the literature supports that they are some of the strongest predictors at each developmental stage. These precursors can be used to monitor and support the development of school readiness. For an extended summary on precursors in all domains, please see *The Road to Readiness: Expanded Discussion of School Readiness.*

Precursors of Language Development

The literature on language development and its importance to school readiness is expansive. Between the ages of zero to five, children are rapidly learning new sounds, words, and language skills. The development of language and emergent literacy skills are intricately connected. Language aids the development of emergent literacy skills, just as emergent literacy builds a child's vocabulary and understanding of language. As such, this section considers precursors in both domains. While there are many precursors that are shown to be strong predictors of later language abilities, the most frequently cited and strongly supported precursors are vocabulary, letter knowledge, and phonological awareness. This section reviews the predictive value of these language precursors between the ages of zero to three and between the ages of three to five.

Between the ages of zero to three, vocabulary appears to be one of the strongest predictors of later language and literacy performance.

The development of oral vocabulary begins at birth, as children learn to make sense of the sounds around them. At roughly six to 12 months, infants begin to recognize familiar words.[32] At roughly 18 months, children experience a vocabulary growth spurt marked by adding new words to vocabulary each day.[33]

[28] Cook et al., 2004; Johnson & Markowitz, 2018; Kitsaras et al., 2018; Rose-Jacobs et al., 2008
[29] Rule & Smith, 2018
[30] Marr et al., 2003
[31] Berger, 2010
[32] Bergelson & Swingley, 2012; Frank et al., 2017
[33] Goldfield & Reznick, 1990; Frank et al., 2017

This growth in vocabulary aids listening comprehension and phonological awareness, both of which are critical to reading comprehension.[34] There are numerous studies linking vocabulary in these early years to later language and literacy performance.[35] Vocabulary is certainly not the only predictor of later reading skills in this developmental stage. For example, early decontextualized talk and early grammar skills have both been shown to make significant contributions to later language and literacy skills. However, surveying the literature reveals that early vocabulary is one of the most frequently cited and strongly supported precursor.

Between the ages of three to five, vocabulary continues to be one of the strongest predictors, along with letter-knowledge and phonological awareness.[36]

Letter knowledge includes both letter-name knowledge and letter-sound knowledge. Letter-name knowledge refers to the ability to identify letters of the alphabet by name, while letter-sound knowledge refers to knowledge of the speech sounds each letter or set of letters represents. One study found that children's letter knowledge at the beginning of kindergarten was the most powerful predictor of reading skills at the end of fourth grade.[37] Phonological awareness, which refers to the ability to recognize and manipulate the sounds made by letters and groups of letters, has also been found to make significant contributions to the early stages of learning to read.[38]

Precursors of Executive Function Development

The literature on Executive Function concludes all constructs are highly related, and all are equally important.

Executive Function is a complex, multicomponent cognitive construct that children use to plan and coordinate their responses.[39] Components of Executive Function most notably include cognitive flexibility, working memory, inhibitory control, and task persistence and attention. Children use cognitive flexibility to make sense of new and increasingly abstract ideas. Working memory is essential as children utilize necessary prior knowledge to make sense of new constructs and learn new skills. Inhibitory control helps children suppress impulses that may be inappropriate in early classrooms. Task persistence and attention allows children to continue engaging in learning activities for sustained periods of time.

Within the Executive Function domain, it is difficult to say with confidence if one precursor or set of precursors is most predictive of later success. Between the ages of zero to five, Executive Function skills build on and grow from each other. This makes them difficult to measure as distinct constructs. Given this measurement difficulty, research often operationalizes Executive Function as a single construct.[40]

[34] Sénéchal, Ouellette, & Rodney, 2007
[35] Hjetland et al., 2017; Sénéchal, Ouellette, & Rodney, 2007; Walley, Metsala, and Garlock, 2003
[36] Schatschneider et al., 2004
[37] Hjetland et al., 2017; Leppänen et al., 2008
[38] Hjetland et al., 2017l; Schatschneider et al., 2004
[39] Cameron et al., 2012
[40] Welsh et al., 2010

Which parenting practices most influence selected child outcomes?

As children develop, they depend on social and environmental inputs, especially from their primary caretakers.

These inputs include activities, capacities, and attitudes that drive learning and later school success. Research on early childhood highlights numerous "evidence-based parenting practices" that contribute to child development and school readiness. This section emphasizes two categories of parenting practices influencing later child outcomes: responsive parenting and supportive home learning environments.

The objective of this section is to emphasize key parenting practices that are strongly supported by existing school readiness literature. The intent is not to ascribe blame or imply fault on the part of parents for not following the practices described within this section. Overdeck Family Foundation recognizes that there may be personal, cultural, or financial reasons that parents do not adopt these practices. Furthermore, we recognize that the list of practices described below is incomplete and may not be culturally relevant to all families. Research can employ assessments constructed on the norms and values of the middle-class or dominant culture, and this can bias findings against children from different linguistic and cultural backgrounds. This means school readiness research may support practices that are not culturally relevant. The discussion below is not meant to be prescriptive. It is a summary of what existing school readiness literature says a parent can do in early childhood that has predictive value for later school success.

For example, we know parent well-being is critical for school readiness and child development. Parental stress, mental health, and maternal smoking make frequent appearances in school readiness literature. Although parent well-being is outside of the scope of the following discussion of parent practices, it is an important and mediating factor and should be recognized as such.

Responsive Parenting

Responsive parenting supports language development and executive function.

Responsive parenting refers to a parent's attention to their child's interests, emotions, and physical needs. It is marked by interactions where parents appropriately and consistently respond to their child's expressions of emotion, social bids, and child vocalizations.

Responsive parenting is positively associated with school readiness.

Responsive parenting is positively associated with school readiness. One study found low maternal sensitivity, defined as how responsive parents were to children, yielded a ten-percentage point decrease in a child's likelihood of being school ready.[42] When parents frequently, consistently, and warmly respond to their children, they help build their child's vocabulary and language skills.[43] Additionally, when parents are warm and responsive, it helps their young child form a secure attachment. Higher levels of Executive Function are more common for securely attached children, predicting school achievements and mathematical scores.[44]

[41] Barblett & Maloney, 2010
[42] Isaacs, 2012
[43] Tamis-LeMonda, Kuchirko, & Song, 2014
[44] Cameron Ponitz et al., 2009

Secure attachment also aids social-emotional development, and children with secure attachments exhibit greater social competence and fewer behavior problems.[45] This suggests the importance of responsive parenting to language, Social-Emotional Functioning, and Executive Function, all of which are critical to school readiness.

Related to responsive parenting is parental mind-mindedness, which refers to a caregiver's tendency to treat the young child as an individual with a mind of their own.[46] It is marked by a caregiver's tendency to accurately label and communicate about their child's mental and emotional states.[47] Research has shown that parental mind-mindedness can predict a child's language ability and self-control, which in turn predicts school readiness.[48]

There is evidence that responsive parenting is influenced by parent Executive Function.[49] For example, parents use inhibitory control to refrain from initial negative reactions that can be elicited by undesirable child behaviors. Working memory helps parents maintain and manipulate information while interacting with their child. Additionally, low maternal executive function has been linked to harsher, more reactive caregiving in the face of challenging child behaviors like noncompliance, inattention, hyperactivity.[50] This suggests that parent Executive Function, through its relationship to caregiving behaviors may influence school readiness.

Supportive Home Learning Environment

Supportive home learning environments can be characterized by structures and routines that support school readiness.

The predictability of routines is important to early child development, providing structure that helps children learn about themselves, their peers, and the world around them. Research reveals that higher levels of routines in early childhood predicted improvements in physical health, and gains in both reading and mathematics scores. Perhaps the most widely researched routine is participation in literacy activities. **Participation in home literacy activities is foundational for academic skill development and development of skills in other domains.** Participation in literacy activities can take a number of forms, including shared-reading activities and elaborative reminiscing.

Shared reading activities are associated with children's vocabulary size, phonemic awareness, print concept knowledge, and positive attitudes toward literacy.[51] One type of shared reading activity is dialogic reading. Dialogic reading is a specific form of interactive shared reading where the adult helps guide the child as an active listener, allowing the child to become the storyteller. Daily reading routines in preschool predicted kindergarten reading scores, fewer conduct problems and less hyperactivity/inattention.[52]

Elaborative Reminiscing is the practice of conversational storytelling about past events, where parents use open-ended questions and prompts to collaboratively construct conversations with their children. In one study, elaborative reminiscing increased child's narrative quality and story comprehension.[53] Storytelling also appears to be one of the most salient preschool routine for children's later social-emotional outcomes.

[45] Shonkoff, 2004
[46] McMahon & Bernier, 2017
[47] Bernier, McMahon, & Perrier, 2017
[48] Bernier, McMahon, & Perrier, 2017
[49] Distefano et al., 2018
[50] Deater-Deckard, Chen, Wang & Bell, 2012; Deater-Deckard, Sewell, Petrill & Thompson, 2010; Cuevas et al., 2014
[51] Bus, van IJzendoorn, & Pellegrini, 1995; Raikes et al., 2006; Sénéchal et al., 1996
[52] Ferretti & Bub, 2017
[53] Reese et al., 2010

The literature on school readiness reveals several additional routines that help provide predictability and stability during childhood as associated with school readiness.

Routines help provide predictability and stability during childhood, giving children the opportunity to engage fully in learning about the world, themselves, and others. The literature on school readiness often cites routines that include singing songs, frequent play, eating dinner as a family, and following an optimal sleep routine.[54] These are not the only routines that benefit school readiness, nor are they all culturally relevant. We are aware that there may be cultural or societal or resource challenges that preclude following the routines summarized in this section. For instance, creating consistent dinner and sleep routines may be especially difficult in the face of food or housing insecurity. However, parents can create stable, predictable environments for children in numerous ways.

SUMMARY

This review has considered the landscape of school readiness literature. It summarizes an extensive body of research on school readiness domains and precursors, as well as parenting practices that support school readiness. A large body of literature concludes the importance of all domains to holistic school readiness; however, language and executive function were found to be particularly predictive of later success. This does not imply that the other domains are unimportant. Skills build upon each other and children rely on all skills to successfully function within early classrooms.

Because the literature emphasized language and Executive Function as the strongest predictors of later school success, this paper considers precursors within these domains that have the strongest predictive value at each developmental stage. Highly predictive language precursors include vocabulary, phonological awareness, and letter knowledge. Vocabulary emerges as particularly important between the ages of 0-3, whereas phonological awareness and letter knowledge are more predictive between 3-5. Within the Executive Function domain, it is difficult to say with confidence if one precursor or set of precursors is most predictive of later success. In early childhood, Executive Function precursors grow together, and they are difficult to measure as distinct constructs. Because of this, research cannot elucidate which, if any, precursor is the most predictive of later success.

Finally, this review considered parenting practices that most influence child outcomes important to school readiness. Surveying the literature reveals the importance of responsive parenting and supportive home learning environments to overall school readiness. Responsive parenting supports development in all domains, but most notably within Social-Emotional Functioning, Executive Function and language. Supportive home learning environments are made up of learning activities and routines that are foundational to child's later success in school. These are not the only parenting practices that are important. However, the literature on child development suggests they are predictive pillars of school readiness.

[54] Ferretti & Bub, 2014; Ferretti & Bub, 2017; Kitsaras et al., 2018; Muniz, Silver, & Stein, 201; Roskos et al., 2010

LIMITATIONS

A number of limitations emerged in this analysis. First, no rigorous statistical test was conducted as part of this landscape study of the literature. This review analyzed trends within the literature to make conclusions based on the frequency and strength of other researchers' findings. Without rigorous statistical tests, this review cannot conclude with statistical confidence that the precursors and domains identified are the *most* predictive.

A second limitation of this review is that it does not describe how school readiness differs across demographic groups or affiliations like special education or English language learners. The purpose of this review was to understand school readiness of children in general in the United States. Because demographic groups were not considered within this review, the analysis makes no mention of the varying needs and supports that promote school readiness within these group affiliations.

While it references some of the most widely used assessments of school readiness, this review does not make distinctions regarding the cultural sensitivity of those assessments. Standardized tests are usually constructed based on the norms of the dominant culture's middle-class children, biasing them against children from different linguistic and cultural backgrounds.[55] The cultural biases of school readiness assessments may inaccurately capture school readiness in certain children or privilege certain cultural identities over others. Given the importance of culture to school readiness stated earlier in this review, this is a limitation.

A final limitation of this study is the variety of definitions of school readiness included within the cited literature. This is a limitation not just of the review, but of the field. In the literature related to school readiness, many definitions are used, and these definitions employ different assessments and measures. Whereas some studies define and measure school readiness only using reading and math achievement, others use a more holistic definition as we have here, encompassing multiple domains including Executive Function, Social-Emotional Functioning, and Physical Well-Being. The variety of the field makes it difficult to perfectly compare studies, who may rely on different definitions or on different measures.

[55] Barblett & Maloney, 2010

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