

Kindergarten Readiness

by Dr. Laura Justice

Professor in the School of Teaching and Learning, The Ohio State University

Overview

The start of kindergarten represents children’s transition into the formal setting of schooling. The ease with which children experience this transition is often seen as predictive of their future achievement; for instance, children who enter kindergarten

with limited academic skills (pre-reading and math competencies, for example often lag behind their more skilled peers through the primary grades in the major content areas. Early education programs are seen as an important mechanism for helping children develop the competencies and skills they need to seamlessly transition to kindergarten.

Kindergarten Readiness:

Kindergarten Readiness: A Definition and Overview

The term “kindergarten readiness” conveys the idea that there are certain skills and competencies children should have developed by the start of kindergarten. The idea that children should be “ready” for kindergarten highlights the distinctiveness of kindergarten from preschool and other early care settings. That is, although a majority of young children participate in center-based care in the years before they start kindergarten, even those that are school-like and emphasize academic preparation, the environment and expectations of the typical kindergarten classroom differ significantly from earlier learning settings. As compared to preschool, kindergarten has more teacher-directed activities and fewer child-directed activities, more whole-class routines and less decentralized free play, and less frequent communication between the teacher and families (Rimm-Kaufman & Pianta, 2000). In addition, the kindergarten classroom typically has a higher teacher-child ratio than earlier center-based settings, thus children may have fewer one-on-one interactions with the teacher than occurred in early education settings. Finally, an important difference between the kindergarten experiences and early care-giving experiences has to do with the expectations of teachers and the standards required of the curriculum. Children are expected to be able to maintain their attention for sustained periods of time, to monitor and manage their own behaviors, to follow instructional routines, and to learn the skills targeted within the curriculum.

An important issue for researchers, practitioners, and policy makers concerns establishing which kindergarten-readiness skills are most important for easing children’s transition to the

kindergarten setting. These are the skills that ought to be targeted most explicitly in preschool programs and monitored within kindergarten readiness screening programs. Typically, readiness skills are grouped into three general areas: (1) academic skills, (2) social-emotional skills, and (3) learning-related behaviors. The chart on pages 3–4 gives an overview of these three areas and skills within each. Academic readiness skills represent the most important forerunners to academic achievement in reading and math. For reading, important indicators of school readiness include vocabulary knowledge, letter-name knowledge, print awareness, and phonological awareness. Measured at or around the start of kindergarten, children who have well-developed skills across these four skill areas tend to be better future readers than children with less-developed skills (Lonigan & Shanahan, 2009). For math, important indicators of school readiness include early number competence, including basic counting, subitizing, and cardinality (Jordan, Kaplan, Ramineni & Locuniak, 2009). Subitizing refers to instantly knowing how many items are in a set without counting them (e.g., recognizing three blocks on sight). Cardinality refers to knowing the number of items in a set (e.g., that a basket contains three apples). When counting the items in a set, children must understand that the last item counted represents the number of items in the set. Additional important indicators include basic patterning, geometry, and measurement and data (Nguyen et al., 2016). Early number competence is by far the strongest, positive measure for predicting longer-term math outcomes (Nguyen et al., 2016). Thus, children who have strong number competence at the start of kindergarten are likely to have better math achievement in the later grades than children without these skills (Jordan et al., 2008).

Social-emotional skills are the second area of kindergarten readiness that represent a child's ability to behave appropriately in social situations (behavioral competence), and to form and maintain peer relations and positive relations with adults (social competence). Regarding behavioral competence, researchers often focus on the child's internalizing and externalizing behaviors and the extent to which these may achieve problematic levels. Internalizing behavior problems are problematic behaviors directed inwardly at one's self. For young children, problematic internalizing behaviors include withdrawing from others and being overly anxious or sad. Problematic externalizing behaviors include talking back to others, being verbally or physically aggressive, and having temper tantrums (Wu, Willcutt, Escovar & Menon, 2014). Although children vary greatly in their internalizing and externalizing behaviors, in general, relatively few children show extremely severe problems in either aspect (Pentimonti, Justice & Kaderavek, 2014). Young children who show very serious internalizing or externalizing behaviors often have a developmental disability, such as autism or language disorder, or experience extreme social-environmental factors, such as homelessness or abuse (Bassuk, Richard & Tsertsvadze, 2015). Children who enter kindergarten with inappropriate levels of internalizing or externalizing behaviors are at high risk for being rejected by and/or bullied by their peers (Bierman, Kalvin & Heinrichs, 2015). In turn, ongoing peer rejection is associated with a host of longer-term negative outcomes, such as delinquency. With respect to social competence, children's ability to engage with their peers and interact appropriately with adults within the kindergarten classroom is often highlighted as an important readiness skill. Important social readiness skills include being able to develop and maintain positive peer relations including friendships. Children with poor peer competence often have few positive peer

relations, may inappropriately dominate others, and engage in attention-seeking behaviors (LaFreniere & Sroufe, 1985). Indicators of social competence regarding adult interactions include being able to follow directions, paying attention to the teacher when he or she is talking, and being able to ask for assistance.

A number of scholars emphasize the importance of social-emotional development as an indicator of kindergarten readiness, although some research has concluded that there is virtually no relationship between children’s social competence and their future academic success (Duncan et al., 2007). Nonetheless, it is important to ensure that children arrive to kindergarten able to adapt to the kindergarten setting and display appropriate behaviors and social competencies (Domitrovich, Cortes & Greenberg, 2007). Further, some argue that being able to behave appropriately in the kindergarten setting is crucial for teachers to be able to instruct children effectively (Rimm-Kaufman et al., 2000).

Learning-related skills are the third area of kindergarten readiness. Learning-related skills represent the child’s capacity to act independently within the classroom and to successfully engage in learning routines. These learning-related skills are sometimes referred to as social-emotional skills, and the terms are sometimes used interchangeably. However, experts increasingly use the term learning-related skills to refer to a set of specific behaviors that benefit children during instructional experiences (McClelland, Acock & Morrison, 2006), especially attention and effortful control. Attention is the learning-related skill that represents a child’s ability to maintain sustained attention for extended periods of time. Effortful control, also referred to as self-regulation and inhibitory control, describes children’s ability to manage their own behaviors, especially with respect to inhibiting dominant or automatic responses to exhibit an alternative behavior (Spinrad et al., 2007, 2012). Both attention and effortful control enable a child to engage in and benefit from extended periods of learning opportunities. Learning-related skills measured at or around the start of kindergarten are significant and positive predictors of future reading and math achievement (Duncan et al., 2007; McClelland, Morrison & Holmes, 2000). In addition, learning-related skills at kindergarten are highly predictive of children’s success in reading and math through second grade (McClelland et al., 2006).

Table 1. Description of Three Areas of School Readiness and Component Skills in Each.

Academic (Cognitive) Skills	
Early Reading	
Vocabulary knowledge	Having a large, growing repertoire of words and word meanings
Letter-name knowledge	Knowing the names and forms of the 26 uppercase and lowercase letters

Print awareness	Understanding a variety of forms and functions related to print (directionality, differences between letters and words)
Phonological awareness	Demonstrating awareness of the sound structures of spoken language
Early Math	
Counting and cardinality	Counting from one (basic verbal counting); counting with cardinality (advanced counting); subitizing (instantly knowing how many are in a set)
Patterning	Duplicating and extending patterns
Geometry	Identifying two-dimensional shapes; building shapes from component shapes
Measurement and data	Using basic measurement instruments; understanding concepts of weight, length, and area
Social-Emotional Skills	
Behavioral competence	Exhibiting age-appropriate internalizing behaviors (not being overly anxious) and externalizing behaviors (not having tantrums)
Social competence	Forming and maintaining positive peer relations and positive relations with adults
Learning-Related Skills	
Attention	Maintaining attention during sustained periods of time
Effortful control	Inhibiting dominant or automatic responses to exhibit an alternative behavior (e.g., being able to not talk to a peer when the teacher tells the children to be quiet)

Given that kindergarten readiness reflects at least three different areas (academic skills, social-emotional skills, learning-related skills), it is important to think about kindergarten

readiness as multidimensional. Children can have well-developed skills in one or two areas of readiness, and less-developed skills in others. Hair and colleagues conducted a study of kindergarten readiness involving more than 17,000 children in a nationally representative sample (Hair, Halle, Terry-Humen, Lavelle & Calkins, 2006). This study showed that many children exhibited strengths and limitations in the different areas of kindergarten readiness. About 30 percent of the children in this sample had overall well-developed readiness skills in all areas, suggesting that only about one-in-three children enters kindergarten fully prepared for the learning expectations of kindergarten.

This raises the issue as to whether parents ought to “redshirt” children who do not appear to be ready for kindergarten due to concerns about their academic, social-emotional, or learning-related skills. Redshirting is the term used to refer to the practice of delaying children’s start of kindergarten even though they are age-eligible (Bassok & Reardon, 2013). Although there are many reasons parents decide to redshirt children at the start of kindergarten entry, including the recommendations of their children’s preschool teachers and other school professionals, the evidence does not seem to support the potential value of redshirting for children, especially with respect to their future academic achievement (Fortner & Jenkins, in press). Specifically, an analysis of third-grade reading and math achievement showed very small benefits of redshirting for students in general, but negative effects for students with disabilities. Children with disabilities whose kindergarten entry was delayed had significantly poorer reading and math skills at third grade than children who were not held back (Fortner & Jenkins, in press). In general, while there is strong interest in ensuring that children arrive to kindergarten with the skills in place that will allow them to succeed, it is also the case that many children do not. When this occurs, it is not clear that delaying the start of kindergarten for an additional year provides any special benefit. Rather, what seems particularly important is that the kindergarten teacher conducts a formal readiness evaluation of each child to determine strengths and needs, and that the curriculum is subsequently tailored for individual children to ensure that they develop the foundational academic and social-emotional skills in kindergarten that will support their achievement over the forthcoming twelve years of schooling.

Why Are Some Children Ready When Others Are Not?

Nationally, research suggests that about one-third of children arrive to kindergarten fully ready (Hair et al., 2006). Investigations of kindergarten readiness have helped us learn more about factors that support kindergarten readiness. First, many developmental disabilities exert negative effects on the precise skills that are highlighted in the kindergarten readiness construct. For instance, a majority of children with disabilities exhibit problems with language and literacy (Pentimonti et al., 2014), which is a core component of the academic readiness dimension. Children with autism spectrum disorder typically have significant issues with behavioral competence, showing heightened levels of both internalizing and externalizing behaviors, as well as social competence; indeed, problems within the social realm are a hallmark of this disorder (Bellini, 2004). Studies such as that done by Justice et al., show that children with disabilities have significantly poorer kindergarten readiness than children without disabilities (Justice, Bowles, Pence Turnbull & Skibbe, 2009). Children with language disorders performed much poorer than their nondisabled peers on reading, math, and social competence, but were similar to their peers on internalizing and externalizing behaviors. Given the established importance

of reading and math skills at kindergarten entrance to achievement in these areas across the elementary years (Duncan et al., 2007), such work highlights the importance of carefully attending to the readiness skills of children with disabilities.

More recent research has strongly emphasized the importance of the kindergarten year to predicting overall achievement trajectories for children with disabilities in the public schools (Morgan, Farkas & Wu, 2011). Specifically, children with disabilities perform much more poorly on reading and math achievement in kindergarten than children without disabilities, and over time they fall even further behind in these areas. In addition, children's readiness at kindergarten as based on measures of reading, math, and learning-related skills served as strong predictors of their achievement trajectories over time. Put simply, the skills that children with disabilities exhibit at kindergarten in reading, math, and learning-related skills are crucial contributors to their progress in reading and math over the next five years of elementary school (Morgan et al., 2011).

There is a growing body of research that is studying the effect of attending preschool in building children's kindergarten readiness. Many experts have asked whether children who participate in preschool have better kindergarten readiness skills than those who do not. Others have asked whether certain types of preschool programs, such as center-based programs and/or high-quality programs, improve children's kindergarten readiness. A few conclusions can be drawn from this body of work. First, several recent studies have compared kindergarten readiness skills for children attending various types of preschool programming in the year prior to kindergarten. Whereas a majority of preschool children attend some type of formal care arrangement in the year prior to kindergarten, there is great variability in the type of setting attended. For instance, children can attend formal prekindergarten programs within the school district (i.e., school-based preschool), nonprofit center-based programs such as Head Start, for-profit childcare programs, and home-based, family-care programs. Some recent work has suggested that the kindergarten readiness of children who participate in school-based preschools is much better than that of children attending other types of settings (Ansari & Winsler, 2012; Hustedt, Jung, Barnett & Williams, 2015). Interpreting this result is challenging, however, as there are many differences across these settings that can account for these findings. For instance, economically disadvantaged families rely more on family-care programs for their children than non-poor families (Crosnoe, Purtell, Davis-Kean, Ansari & Benner, 2016). The elevated kindergarten readiness seen for children in school-based preschools may reflect their families being more advantaged than those in other types of settings. Nonetheless, there is reasonably strong evidence to suggest that school-based preschool programs can be quite successful in enhancing children's skills in key readiness areas, including literacy (Huang, Invernizzi & Drake, 2012).

Second, a strong body of research also suggests that high-quality preschool programs are especially instrumental in helping children improve their kindergarten readiness (Hatfield, Burchinal, Pianta & Sideris, 2016; Mashburn et al., 2008). High-quality preschool programs are programs in which the interactions taking place within the classroom are especially rich: teachers and children frequently engage in extended conversations, children receive formative feedback from the teachers, and instructional interactions are cognitively challenging (Hamre, Hatfield, Pianta & Jamil, 2014). Irrespective of the type of program in which children are attending, such as

Head Start versus public preschools, evidence points to the importance of high-quality preschool for elevating children’s kindergarten readiness (Hatfield et al., 2016). A recent study examined the kindergarten-readiness profiles of 338 children residing in low-income, rural, Appalachian communities. All of the children attended center-based preschool programs in the year prior to kindergarten entry. This study showed that one-fourth of children had well-developed readiness skills across all three dimensions of academic, social-emotional, and learning-related skills; importantly, the preschool programs these children attended were significantly higher in quality than those attended by children who had less-developed readiness skills. Furthermore, 16% of the children showed very poor readiness skills across all three dimensions, and these preschool programs they had attended were rated as the lowest in overall quality (Justice et al., 2016). Such work suggests that preschool attendance alone does not necessarily result in heightened kindergarten readiness, but that the quality of the preschool program is an especially important consideration.

Strategies for Improving Kindergarten Readiness

With a great deal of attention directed toward the importance of kindergarten readiness, coupled with evidence that a significant number of children arrive to school without adequate readiness, it is not surprising that there are a variety of strategies available by which to improve children’s kindergarten readiness. Those discussed most frequently in the research include (1) preschool participation and (2) preschool curricula.

Preschool participation. Historically, preschools existed largely to support children’s social development, with an emphasis on exploration and free play. In the past two decades, preschools have become increasingly school-like, with curricula organized to address national and/or local learning standards. A major impetus for the adoption of early learning standards in preschool programs is to ensure that children are developing the skills they need to arrive to kindergarten ready to learn.

As noted previously, there is considerable evidence suggesting that preschool participation can be fruitful for improving children’s kindergarten readiness, especially when programs are of high quality (Howes et al., 2008; Huang et al., 2012). For children who may experience delays in their development of readiness skills before entering kindergarten—such as children who are from economically disadvantaged homes, exhibit disabilities, and/or are acquiring English as a second language—participation in a quality preschool program may be especially beneficial (Ansari & Winsler, 2012, 2016; Pentimonti et al., 2014).

Preschool curricula. Preschool participation can be particularly helpful for improving children’s kindergarten readiness across the cognitive, social-emotional, and learning-related areas when it provides children with explicit opportunities to develop these skills. Many preschool programs utilize a general pedagogical framework, rather than adhere to a curriculum with a robust scope and sequence of instruction for teachers to follow to ensure that their children develop critical skills in early reading, math, social competence, and learning-related skills. However, it is this scope and sequence of instruction, coupled with explicit learning routines, that seems particularly important for helping children develop these readiness skills (Bierman et al., 2008; Justice, Logan,

Kaderavek & Dynia, 2015; Landry, Swank, Anthony & Assel, 2011). Many researcher-developed curricula have been evaluated for their effects on children's development of skills across the three readiness dimensions, and studies find that teacher implementation of preschool curricula focused on improving kindergarten readiness have important benefits to children.

Perhaps the greatest limitation in this accumulating body of work, however, is that very few comprehensive school-readiness preschool curricula have been developed and tested. That is, many of the curricula available target only a single area of readiness. Teachers seeking to develop children's kindergarten transition across multiple areas, therefore, often piece together various curricula, which can be time-consuming and stressful. In fact, one study of preschool teachers' implementation of a collection of a number of strategies and programs showed that teachers did not sustain many aspects of the programs over time (Bierman et al., 2013). Likely, when different programs and strategies are mended together, they are unlikely to feel a cohesive whole, leading teachers to abandon the curriculum entirely or specific components. There is a great need for comprehensive, cohesive preschool programs that provide a scope and sequence targeting the comprehensive range of kindergarten readiness. A comprehensive curriculum can be used effectively by teachers and sustained over time, supporting children to develop the range of readiness skills that are instrumental for a smooth transition to kindergarten.

References (continued)

- Duncan, G. J., Dowsett, C. J., Claessens, A., Magnuson, K., Huston, A. C., Klebanov, P., . . . Brooks-Gunn, J. (2007). School readiness and later achievement. *Developmental Psychology*, 43(6), 1428.
- Greenberg, M. T., Kusche, C. A., Cook, E. T., & Quamma, J. P. (1995). Promoting emotional competence in school-aged children: The effects of the PATHS curriculum. *Development and psychopathology*, 7(01), 117-136.
- Hair, E., Halle, T., Terry-Humen, E., Lavelle, B., & Calkins, J. (2006). Children's school readiness in the ECLS-K: Predictions to academic, health, and social outcomes in first grade. *Early Childhood Research Quarterly*, 21(4), 431-454.
- Hamre, B., Hatfield, B., Pianta, R., & Jamil, F. (2014). Evidence for general and domain-specific elements of teacher-child interactions: Associations with preschool children's development. *Child Development*, 85(3), 1257-1274.
- Hatfield, B. E., Burchinal, M. R., Pianta, R. C., & Sideris, J. (2016). Thresholds in the association between quality of teacher-child interactions and preschool children's school readiness skills. *Early Childhood Research Quarterly*, 36, 561-571.
- Howes, C., Burchinal, M., Pianta, R., Bryant, D., Early, D., Clifford, R., & Barbarin, O. (2008). Ready to learn? Children's pre-academic achievement in pre-kindergarten programs. *Early Childhood Research Quarterly*, 23(1), 27-50.
- Huang, F. L., Invernizzi, M. A., & Drake, E. A. (2012). The differential effects of preschool: Evidence from Virginia. *Early Childhood Research Quarterly*, 27(1), 33-45.
- Hustedt, J. T., Jung, K., Barnett, W. S., & Williams, T. (2015). Kindergarten Readiness Impacts of the Arkansas Better Chance State Prekindergarten Initiative. *The Elementary School Journal*, 116(2), 198-216.
- Invernizzi, M., Justice, L. M., Landrum, T. J., & Booker, K. (2004). Early Literacy Screening in Kindergarten: Widespread Implementation in Virginia. *Journal of Literacy Research*, 36(4), 479-500. doi: 10.1207/s15548430jlr3604_3
- Jordan, N. C., Kaplan, D., Ramineni, C., & Locuniak, M. N. (2009). Early math matters: kindergarten number competence and later mathematics outcomes. *Developmental Psychology*, 45(3), 850.
- Justice, L. M., Bowles, R. P., Pence Turnbull, K. L., & Skibbe, L. E. (2009). School readiness among children with varying histories of language difficulties. *Developmental Psychology*, 45(2), 460.
- Justice, L. M., Logan, J. A., Kaderavek, J. N., & Dynia, J. M. (2015). Print-Focused Read-Alouds in Early Childhood Special Education Programs. *Exceptional Children*, 81(3), 292-311.

References (continued)

- LaFreniere, P. J., & Sroufe, L. A. (1985). Profiles of peer competence in the preschool:
Interrelations between measures, influence of social ecology, and relation to attachment history. *Developmental Psychology, 21*(1), 56.
- Landry, S. H., Swank, P. R., Anthony, J. L., & Assel, M. A. (2011). An experimental study evaluating professional development activities within a state funded pre-kindergarten program. *Reading and Writing, 24*(8), 971-1010.
- Lonigan, C. J., & Shanahan, T. (2009). Developing Early Literacy: Report of the National Early Literacy Panel. Executive Summary. *A Scientific Synthesis of Early Literacy Development and Implications for Intervention*. Washington, DC: National Institute for Literacy.
- Mashburn, A. J., Pianta, R. C., Hamre, B. K., Downer, J. T., Barbarin, O. A., Bryant, D., . . . Howes, C. (2008). Measures of Classroom Quality in Prekindergarten and Children's Development of Academic, Language, and Social Skills. *Child Development, 79*(3), 732-749. doi: 10.1111/j.1467-8624.2008.01154.x
- McClelland, M. M., Acock, A. C., & Morrison, F. J. (2006). The impact of kindergarten learning-related skills on academic trajectories at the end of elementary school. *Early Childhood Research Quarterly, 21*(4), 471-490.
- McClelland, M. M., Morrison, F. J., & Holmes, D. L. (2000). Children at risk for early academic problems: The role of learning-related social skills. *Early Childhood Research Quarterly, 15*(3), 307-329.
- Morgan, P. L., Farkas, G., & Wu, Q. (2011). Kindergarten children's growth trajectories in reading and mathematics: Who falls increasingly behind? *Journal of Learning Disabilities, 0022219411414010*.
- Nguyen, T., Watts, T. W., Duncan, G. J., Clements, D. H., Sarama, J. S., Wolfe, C., & Spitzer, M. E. (2016). Which preschool mathematics competencies are most predictive of fifth grade achievement? *Early Childhood Research Quarterly, 36*, 550-560.
- Pentimonti, J. M., Justice, L. M., & Kaderavek, J. N. (2014). School-readiness profiles of children with language impairment: linkages to home and classroom experiences. *International Journal of Language & Communication Disorders, 49*(5), 567-583.
- Rimm-Kaufman, S., & Pianta, R. C. (2000). An ecological perspective on the transition to kindergarten: A theoretical framework to guide empirical research. *Journal of Applied Developmental Psychology, 21*(5), 491-511.
- Rimm-Kaufman, S., Pianta, R. C., & Cox, M. J. (2000). Teachers' judgments of problems in the transition to kindergarten. *Early Childhood Research Quarterly, 15*(2), 147-166.

References (continued)

Spinrad, T. L., Eisenberg, N., Gaertner, B., Popp, T., Smith, C. L., Kupfer, A., . . . Hofer, C. (2007).

Relations of maternal socialization and toddlers' effortful control to children's adjustment and social competence. *Developmental Psychology*, 43(5), 1170-1186.

Spinrad, T. L., Eisenberg, N., Silva, K. M., Eggum, N. D., Reiser, M., Edwards, A., . . . Gaertner, B.

M. (2012). Longitudinal relations among maternal behaviors, effortful control and young children's committed compliance. *Developmental Psychology*, 48(2), 552-566.

Wu, S. S., Willcutt, E. G., Escovar, E., & Menon, V. (2014). Mathematics achievement and

anxiety and their relation to internalizing and externalizing behaviors. *Journal of Learning Disabilities*, 47(6), 503-514.