Executive Summary

This report summarizes research about development during the first three years in order to highlight areas that are foundational for later school readiness and success. This information can be used as a guide by programs to inform their practices and policies and to help programs think about their own theories of change or strategies for continuous improvement and what outcomes they are most focused on improving for young children.

Until recently, the term school readiness has typically been applied to preschool-aged children, but it is now increasingly being used in relation to infants and toddlers. With this shift comes the knowledge that birth to age 3 is a time of unparalleled growth and change that provides special opportunities to support school readiness, and school readiness for this age group must be defined with those particular characteristics in mind.

Research and theory provide some general principles that guide the understanding of the relationship between infant/toddler development and school readiness. These principles include:

- Children are active participants in shaping their own development.
- Relationships and experiences are the primary ways development occurs.
- Development is complex and transactional, meaning that the child affects the environment while the environment affects the child in ongoing and cyclical ways.
- Development and learning occur in multiple systems or contexts, including the family, early care and education programs, and broader culture.
- All areas of development are interrelated.
- There are vast individual differences in rates of development among children.
- Birth to age 3 is a distinct developmental period that is the foundation for later development.

With these principles in mind, we turn to the five school readiness domains—perceptual, motor, and physical development; social and emotional development; approaches to learning; language and communication; and cognition—and consider findings from research across these domains that develop during the first 3 years of life.

Perceptual, Motor, and Physical Development

This domain involves growth and change in the following areas: weight and length; motor skills; perceptual development; brain development; and physical well-being and general health. Infants and toddlers grow significantly in both length and weight. It is important to monitor how individual children grow compared to typical development, as this monitoring can highlight potential developmental problems and allow for early intervention to remedy or reduce the impact on early development and learning. Motor skills development encompasses both gross and
fine motor skills. By using these skills to explore and engage with the world, infants and toddlers build their knowledge and make strides in development. Gains in perceptual development, which encompass vision, hearing, smell, taste, and touch, also allow infants to use their senses to explore and gather information about their world. As with motor skills, because exploration is a foundation for learning, early perceptual development supports school readiness.

Physical development also includes brain development, and research is clear that the brain makes more neural connections from birth to age 3 than at any other time. Early interpersonal experiences and environmental factors set the stage for brain development and can promote positive development. Research also highlights harmful environments and factors that can impede positive physical development. These include abuse and neglect; living in poverty; food insecurity; obesity; lack of immunizations; and environmental threats, such as lead, pesticides, household chemicals, asbestos, air pollution, and tobacco smoke. Finally, some recent research suggests a link between physical health and school readiness, with suboptimal health predicting vulnerability at school entry.

Social and Emotional Development

This domain, the foundation for children’s mental health and well-being, includes the core concepts of temperament; emotional and behavior regulation; attachment; and friendship. Researchers have proposed a number of components of temperament. All of these include a dimension that relates to qualities of the infants’ social and emotional approach to the world. The research reviewed in this section highlights the important role of early social-emotional development in laying a foundation for school readiness. Temperament is often viewed as one of the core elements of a larger construct of “personality” or what makes an individual unique. Children’s temperament can influence their relationship with caregivers in child care, their experience in care, and their sensitivity to the effects of the environment.

Research also shows that the ability to regulate one’s emotions is a critical aspect of school readiness and is intimately tied to children’s ability to regulate their own behavior. Finally, children’s attachment styles can also impact school readiness, with children with secure attachments demonstrating better outcomes, both socially and academically. While children attach first to caregivers as infants and toddlers, as they mature, their early attachment relationships form the foundation for the development of friendships with same-age peers. Peer sociability, or friendship, is an important component of school readiness because the ability to get along well with others is a prerequisite to many activities in kindergarten and beyond.

Approaches to Learning

Approaches to learning include both social and cognitive developmental skills as they relate specifically to learning experiences and within educational settings. The emerging research linking learning behaviors in infancy and toddlerhood to later school readiness has focused on interest and persistence. Interest and persistence are both related to temperament and both enhance school readiness by providing opportunities to learn. Research also shows that maternal behaviors can support and enhance interest and persistence in infants and toddlers.

Executive functioning is also considered part of approaches to learning. Executive functioning is a term used to describe many abilities, including the ability to delay gratification, think before reacting, figure out where to direct attention in order to learn and be safe, and remember things that have been learned before. These important abilities allow children to learn, explore the world, and be successful in school and relationships. Executive functioning abilities have been linked with school success in math and reading, communication, and social-emotional skill.

As noted above, some of the behaviors understood to be part of approaches to learning, including persistence, attention, memory, and executive functioning, overlap
with other developmental domains. While development is often divided into categories, such as cognitive or social development for ease of discussion, in reality, development is holistic with milestones in one area influencing another, especially with infants and toddlers.

**Language and Communication**

Concepts important to language and communication include early communication efforts; receptive and expressive language abilities; joint attention; language environments; and individual variation in language development. Early communication efforts such as looking, crying, and babbling are crucial because they begin the developmental progression to later language abilities. Expressive language abilities begin later than receptive abilities, but vocabulary size by age 2 can have implications for later language development and school readiness. Joint attention episodes, which include an adult and child working together on a shared interest, are important for language development. While the adult is initially responsible for successful joint attention episodes, as infants grow, they develop pointing skills and the ability to focus on both the object and the social partner involved in the joint attention experience and can begin to take the lead. Toddlers with better joint attention skills develop language more rapidly and have better receptive and expressive language at 30 months. Moving beyond joint attention, the importance of the overall language environment directly experienced by the child is highlighted. Finally, there is great variability in how different children develop language. These individual variations in language development can often make it hard to know when a child truly has a language delay. During these early years, professionals tend to be more concerned when apparent delays are evident in both understanding (receptive language) and speaking (expressive language).

**Cognition**

Concepts important to cognition include information-processing mechanisms (attention, memory, categorization); imitation; and pretend play. The growth in children's language abilities results, in part, from changes in underlying cognitive abilities known as information-processing mechanisms, which include attention, memory, and the ability to form categories or connections between information stored in memory (categorization). Focused attention provides a strong foundation for later development and has been found to be one of the strongest predictors of later school success. Information processing mechanisms (i.e., attention, memory, and categorization) provide the foundation for the emergence of higher-order cognitive skills, including executive functioning. Again, the research findings highlight the general developmental principle that all areas of development are interrelated.
Conclusion

The research reviewed leads to the following conclusions:

- **Infancy/toddlerhood is the time when foundations of school readiness begin**—adults who interact with infants and toddlers must be aware of the opportunities that exist to support these early developing skills and abilities in young children.

- The **unique developmental characteristics of infants and toddlers** require age-appropriate strategies for supporting school readiness.

- Supporting school readiness during the infant/toddler period requires attention to all developmental domains.

- Infant and toddler development is **individual and embedded in family, culture, and other societal influences**. Programs and policies should acknowledge, respect, and respond to these multiple influences on infants’ and toddlers’ development.

- Program design and implementation should be informed by current research on infant and toddler development.

- Professional development for early childhood educators and caregivers examining the specific skills needed to support infant and toddler development must be a priority.

- Families, the general public, and policy makers must be made aware of the unique opportunities to lay the foundation for later school success that exist during the first years of life.

- Cross-systems collaboration is required for early care and education to meet its true potential to support the development of infants and toddlers.

- Further research is needed. Current research supports the conclusion that school readiness begins in infancy and is supported by a range of high-quality comprehensive services available to infants, toddlers, and their families. The next step is to research what components of programs and interventions are especially critical for producing desired outcomes in specific children.