The SCIENCE behind The Basics PRINCIPLES

Introduction

Parental beliefs and practices reflect families' histories and circumstances. For instance, most new parents learn about caregiving strategies from family members and friends, where some networks are rich with information and social supports, but others may not be. Our priority is to help ensure that all families with children aged birth to three have the information and supports they need to launch their infants and toddlers toward life success.

The Basics initiative began because cognitive skill gaps between children of different races, ethnicities, and parental education levels are starkly apparent in nationally representative data by the age of two (Halle et al., 2009). Our strategy is designed to work with community-based organizations and service providers to tackle achievement gaps beginning at birth, because disparities that are well-established by the start of school are hard to overcome (Cunha & Heckman, 2007; Peterson et al., 2018).

Multiple features of infants' and toddlers' environments, especially parental responsiveness to early attempts at communication, play foundational roles in shaping brain architecture (National Scientific Council on the Developing Child, 2007). Indeed, the rapidity and plasticity of early brain development makes the early years—and especially the first three, upon which we focus—a period rich with opportunities for raising lifetime trajectories of achievement and well-being (McKinsey & Company, 2009; Phillips et al., 1998; Tamis-LeMonda et al., 2017).

The five Basics Principles featured in this review serve as a framework for community-level family engagement by providing a collective-action focus that is conceptually clear, with common vocabulary. In addition, they scaffold a suite of learning resources that frontline organizations use to inform and support families.

The Principles were distilled from scientific literature by the Achievement Gap Initiative at Harvard University, with assistance from a national advisory committee of early childhood scholars. What emerged are five tenets that are broad in coverage of key concepts, easily understandable, and appealing to our target audiences of parents, caregivers, and the frontline professionals they rely upon for advice and support.

Contact: info@thebasics.org
www.thebasics.org

The Principles

Maximize Love, Manage Stress

Talk, Sing, and Point

Count, Group, and Compare

Explore through Movement and Play

Read and Discuss Stories

This review and other materials designed to share the Principles with parents convey the key understanding that early learning is experienced in give-and-take, *serve and return* relationships between children and their caregivers (National Scientific Council on the Developing Child, 2004). Ideally, a caregiver targets the child's *zone of proximal development* by providing just enough support (*scaffolding*) to foster learning and help them accomplish what they cannot do on their own, as Lev Vygotsky suggested almost a century ago (Yasnitsky, 2018).

The review details how The Basics Principles are related to the standard developmental outcomes emphasized in the literature and often in public policy. For example, state early learning guidelines and national programs such as Head Start tend to classify early learning and development into five domains:

- social-emotional development;
- language and literacy development;
- cognition and general knowledge;
- physical development and wellbeing;
- and approaches to learning.

Additional outcomes emphasized below and in contemporary discourse cross-cut these five. They include executive function (working memory, attention, and cognitive flexibility) and self-regulation.

Our priority concern is to narrow achievement gaps between groups that tend to form in the first few years of life. Therefore, we document average differences in life experiences and outcomes between children from different backgrounds. However, it is important to understand that differences between groups, as measured by group averages, are small compared to the range of variation among individuals. For any given parenting practice or measure of childhood achievement, the within-group difference between the top and bottom of the distribution will be much larger than the difference between averages for any two groups.

Hence, the work has relevance for families from all backgrounds. The review is based on research that analyzes differences among families to understand the strengths that some parents—no matter what their education or income might be—bring already and from which others can potentially learn.

The review has five sections, each covering one of The Basics Principles and concludes with a note on culture.

Maximize Love, Manage Stress

Maximizing love and managing stress helps caregivers stay emotionally present with their children. Consistent, nurturing relationships and freedom from excessive stress promote children's development and emotional wellbeing.

Warm and responsive parenting that aims to maximize love and manage stress lays the foundation for healthy development in infancy and beyond, by fostering positive outcomes in children's executive functioning, social-emotional development, language development, academic skills, and mental health outcomes (Bernier et al., 2010; Bohr et al., 2018; Coley et al., 2011).

Infants rely on caregivers to help regulate physiological and emotional states by consistently meeting needs and responding promptly to their cues (e.g., facial expressions, movements, verbalizations). This includes comforting the infant when they show signs of distress, playing and sharing in "mutually enjoyable" interactions, and helping the infant return to a calm state when overstimulated (Rowe & Zuckerman, 2016, p. 872; Sparrow, 2013). The Center on the Developing Child (2007) uses the phrase *serve and return* to describe the reciprocal nature of interactions between caregiver and child.

Warm and responsive caregiving supports the formation of a secure attachment, where the infant bonds with the parent and develops an expectation that they can rely on the adult to meet their needs (Ainsworth & Bell, 1970). This promotes social-emotional adjustment and supports the child's exploratory tendencies as they seek to learn about the environment, because they trust that they can rely on the parent for help if needed.

Responsive caregiving supports emerging self-regulatory skills, because it helps the infant to gradually gain more control of their body, attention, and emotions (National Research Council and Institute of Medicine, 2000). As older infants and toddlers develop more awareness of themselves and the social world, parents continue to provide scaffolding for social-emotional development and learning. For example, they talk about feelings and mental states and model behaviors that add to the child's knowledge and repertoire of strategies for self-regulation, while supporting the child's growing autonomy (Bernier et al., 2010). And when older infants and toddlers start naturally to test limits, warm and responsive parents guide the child's behavior using age-appropriate strategies and limit-setting while maintaining a loving connection.

As parents show love and support their children's exploration and mastery of new skills, research points to the importance of process praise—affirmation that focuses on the effort and approach taken to complete a given task, rather than phrases like "You're so smart!" that emphasize ability. Process praise has been shown to cultivate a growth mindset that fosters persistence and is linked to later academic gains (Gunderson et al., 2018).

The other part of this first Principle is to ***manage stress***.

Stress is a normal feature of life. An important part of early childhood parenting is helping children learn to cope effectively with stress and challenges. The Center on the Developing Child at Harvard University (n.d.) uses the term *positive stress* to refer to everyday events (e.g., falling and scraping a knee) that briefly activate the body's stress response system. *Tolerable stress* refers to more serious events (e.g., the death of a loved one) that could have long-term effects but where the presence of a supportive relationship helps the child recover. Finally, *toxic stress* arises from chronic stress or an accumulation of trauma or *adverse childhood*

experiences (ACEs), such as neglect or abuse. Toxic stress causes chronically elevated stress hormones and can lead to dysregulation of the stress response system. Overactivation of the stress response can hamper brain development in areas associated with executive functioning skills such as memory and inhibitory control, as well as undermine long-term physical and mental health (Committee on Psychosocial Aspects of Child and Family Health, 2012).

A history of toxic stress, or living with stressors such as poverty, can affect a parent's ability to engage in responsive caregiving and learning activities. They may struggle with mental health problems such as depression, or have limited mental "bandwidth" to direct toward children due to preoccupation with stressful circumstances (Blair & Raver, 2016; Kalil, 2014; Lange et al., 2016). Research has shown that such challenges can be partially overcome through interventions that coach parents on providing responsive, stimulating care (Landry et al., 2008). Other promising approaches include efforts to meet material needs (Smith et al., 2013), provide psychosocial support, strengthen caregivers' executive functioning, and help parents manage stress through practices such as mindfulness (Kalil, 2014). Behavioral science has also highlighted programmatic elements such as commitment devices, behavioral prompts, and incentives that bolster the impacts of parenting interventions among parents living in stressful circumstances (Kalil, 2014).

Even in highly stressful contexts, secure parent-child relationships help buffer the effects of stress and promote resilience (Bradley et al., 2013). For example, infants and toddlers who have secure relationships with their caregivers tend to be less emotionally and physiologically sensitive to stressful situations (Nachmas et al., 1996). A loving and secure relationship with even one caregiver can yield lasting positive payoffs throughout a child's life.

Talk, Sing, and Point

Talking, singing, and pointing accelerate language development, which in turn accelerates children's early learning and engagement with the surrounding world.

Early verbal skills, such as a child's vocabulary at kindergarten entry, are among the strongest predictors of later academic achievement (Golinkoff et al., 2019). Hence, they are critically important. And, while learning language seems effortless for the vast majority of children (Golinkoff et al., 2019), research has determined that key features of early language input are associated with meaningful individual- and group-level differences in children's early skills and vocabularies. In fact, even though recent public discourse has focused on disparity in the amount of language directed at more- versus less-advantaged children, such as *the 30-million word gap* (Hart & Risley, 1995), research indicates that the *quality* of language input matters more than the overall amount (Rowe & Zuckerman, 2016).

Let us distinguish three aspects of such quality.

FIRST, language learning is an inherently "collaborative" process (Tamis-LeMonda et al., 2014, p. 121). A recurring finding is that children benefit from interactions with a give-and-take (serve-and-return) nature between the parent and child, with the parent responding to—and building on—the child's efforts to communicate. The key role of responsiveness in language learning has been found across cultural and socioeconomic groups, predicting language and IQ outcomes up to 10 years later (Hirsch-Pasek et al., 2015; Gilkerson et al., 2018; Tamis-LeMonda et al., 2014). Mere exposure to people talking, such as

listening to the radio or television, provides little benefit (Kuhl et al., 2003; Kuhl, 2007). But this is not to say that all technology should be rejected, since some technologies allow for two-way exchanges. Video chatting, for example, allows for serve and return and can therefore have similar benefits for a child as communicating with someone in the same room (Roseberry et al., 2014).

SECOND, infants and toddlers learn new words—and, most importantly, the knowledge they encapsulate—during contextually relevant situations (e.g., learning words for body parts while the parent is dressing them) and on topics that interest them (Tamis-LeMonda et al., 2018; Snow, 2017). Daily routines and cultural rituals such as bathing, feeding, and playing are full of opportunities for the parent and child to connect around a joint focus, which helps the child make meaning and map words to objects or actions. Furthermore, the structured and repetitive nature of these rituals comprises a conceptual script that supports learning and memory (Tamis-LeMonda et al., 2018). Complementing routine activities, new, out-of-the-ordinary experiences stimulate the child's interest and expose them to new horizons and new words (Snow, 2017).

THIRD, high-quality conversations are mostly positive in tone. Reprimands or prohibitions ("Do not touch that") are negative in tone and serve as "conversation closers" (Dickenson et al., 2011, p. 5). On the other hand, affirmations ("That's an interesting toy," p. 5) invite engagement. Home language environments defined by higher ratios of positive language to reprimands help establish a supportive and stimulating context that enhances children's skills.

As Rowe and Zuckerman (2016) note, certain features of language input rise in salience at particular ages.

The most effective speaking style for communicating with an infant is referred to as parentese. The hallmark of parentese is a high-pitched, sing-song intonation with exaggerated vowel sounds, accompanied by eye contact and positive, exaggerated facial expressions. Parentese also involves the repetition of words. Together, these vocal tones and facial expressions capture the baby's attention and help them parse the stream of speech into sound components and words (Kuhl, 2007). Often, the child makes sounds to reciprocate. By responding to the infant's verbalizations or other efforts to engage, the parent teaches the infant that "language is a tool that enables intentions to be socially shared" (Tamis-LeMonda et al., 2014, p. 121).

Children's receptive vocabularies (words they understand) expand dramatically between 6 and 18 months of age, leading their expressive vocabularies (words they can say) by approximately 6 months (Rowe & Zuckerman, 2016). During this period, parents facilitate vocabulary growth by labeling and discussing familiar objects in the environment. A standard element of labeling behavior is the use of gestures, especially pointing (Pan et al., 2005).

Children begin to gesture during infancy, after which it remains an important supplement to verbal expression as they learn to say words (Capone, 2007; Goldin-Meadow, 2009). There is also evidence that the more parents gesture, the more their children will (Rowe & Goldin-Meadow, 2009; Tamis-LeMonda et al., 2012), and that gesture plays a key role in learning. Randomized experimental trials have established that infants who are encouraged to gesture during a word learning task (for example, "That's a pig. Can you point to the pig?") gesture more and say more words at follow-up (LeBarton et al., 2015).

Children's gestures are meaningful and often effectively instrumental, by guiding adults in scaffolding interactions to meet their needs (for example, picking them up when they raise their hands) or supplying new vocabulary words or information on topics of interest (such as labeling an object to which the child points; Goldin-Meadow et al., 1993).

Into the toddler years, the richness and complexity of conversations increases. The diversity of words is a key feature of quality. Observing mothers of children from 1 to 3 years of age, Pan et al. (2005) found that the variety of words a mother used predicted her children's later vocabularies whereas overall talkativeness did not. Parents also ask increasingly challenging questions, specifically "wh" questions (who, what, why) that elicit more verbally complex responses and promote reasoning (Rowe et al., 2017). And as cognitive development progresses, high-quality conversations feature increasing amounts of decontextualized talk, including "non-present events, explanations, or pretend" (Uccelli et al., 2018).

Singing, which is the other part of Talk, Sing, and Point, facilitates parent-child bonding as well as language and literacy development. Nakata and Trehub (2013) found that infant-directed singing attracted infants' attention longer and more fully than speech, which the researchers attribute to singing's emotional expressiveness and repetitive nature. Familiar songs are experienced as pleasurable and appear to be more effective than regular speech or unfamiliar songs for soothing infants when they are distressed (Cirelli & Trehub, 2020). Singing, therefore, provides a unique opportunity for "emotional communion" and regulation between parent and child (Nakata & Trehub, 2013, p. 456). In addition, the rhythmic and rhyming nature of many early childhood songs and nursery rhymes is highly enjoyable for children and supports phonological awareness—the ability to discern the sound structure of words—and later reading ability (Dunst, Meter, & Hamby, 2011).

Studies tend to show substantial disparities, on average, in how much children from different backgrounds experience the early language environments that this second Principle promotes.

For example, by 24 months of age, low-income children are already approximately 6 months behind more advantaged peers in language processing skills (Fernald et al., 2013). Disadvantaged children develop smaller vocabularies and a more limited command of grammar by preschool (Hart & Risley, 1995; Vasilyeva et al., 2008). This is problematic given that early gaps in language development tend to predict later gaps in literacy and school success (Snow et al., 1998; Vernon-Feagans et al., 2002).

These disparities in outcomes are associated with differences in early language input. By age 3, middle- and upper-income children typically have heard more utterances and a greater diversity of words than low-income children (Hart & Risley, 2005; Pan et al., 2005). Low-income parents have been found to use more directives, engage in fewer conversational turns, and ask fewer questions than higher-income peers (Hoff, 2006). Socioeconomic, racial, and ethnic differences have been found with respect to the amount and types gestures parents use (Rowe & Goldin-Meadow, 2009; Tamis-LeMonda et al., 2012).

Yet these differences in early language environments are not intractable. Even if caregivers have limited opportunities to interact with their children, they can still enrich the vocabulary they use to communicate with children and engage in more developmentally tailored, high-quality back-and-forth exchanges routinely during the times that they already spend together (Ridge et al., 2015; Rowe & Zuckerman, 2016).

Count, Group, and Compare

Counting, grouping, and comparing lay the foundations for mathematical thinking, helping children make sense of the numbers and categories they encounter in the world.

Mathematical knowledge and skills begin to emerge very early, as infants enter the world with seemingly innate intuitions for making sense of the quantitative world (Izard et al., 2009; Starkey et al., 1990).

Four concepts that infants seem to intuit quite early are "attribute, comparison, pattern, and change" (Chen et al., 2017, p.25). These precursor concepts undergird the eventual understanding of spatial relationships, cardinality (understanding, for example, that the number five refers to a set of five objects), numerical operations, and measurement (Ginsburg et al., 2008). Getting an early head start on such ideas sets the stage for more complicated mathematical reasoning and helps forestall cognitive skill gaps during the school years between children of different backgrounds (Gunderson et al., 2012; Levine et al., 2010).

Each of the precursor concepts relates to a form of discernment, focused on the qualities and attributes of objects and phenomena young children encounter in their daily lives. Infants, for example, use their newfound sensory capabilities to discern differences between what they "like and dislike" or what makes them feel "safe or unsafe" (Chen et al., 2017, p. 26). Later, toddlers use attributes such as more versus less and color, shape, and size to formulate descriptions and to classify objects into groups. Their ability to perceive the attributes of objects or sets of objects becomes more sophisticated as their capacities to categorize and compare grow more refined (Chen et al., 2017).

Beyond the basic discernment involved with categorizing and comparing, there is a growing body of literature on how caregivers help children develop early math skills by counting and grouping (Levine et al., 2011, for a review), and how much it matters. The frequency of "number talk"—for example, "Let's count the apples. Ready? One, two, three, four, five. There are five apples!"—promotes understanding of cardinal numbers (p. 1315). Levine et al. (2010) found that the amount of parent number talk when children were 14 to 30 months predicted their understanding of cardinal numbers at preschool entry, even after controlling for socioeconomic status.

The type of number talk also matters. Gunderson and Levine (2011) report that counting and labeling the total number of visible objects in a set is related to children's later cardinal-number knowledge, whereas talk about numbers of objects that are not visible has little to no impact. In addition, they report that "... number talk that refers to large sets of present objects (i.e., sets of size 4 to 10 that fall outside children's ability to track individual objects) is more robustly predictive of later cardinal-number knowledge than talk about smaller sets" (p. 1021).

The above findings extend to additional spheres of mathematical learning. For example, in the domain of spatial reasoning, Pruden et al. (2011) discovered a variability in the amount of spatial language parents use when talking to their children (for example, dimensional adjectives, such as "big, little, tiny, tall, etc.," or spatial feature terms, such as "bent, curvy, edge, side, etc."; p.6). This variability in spatial talk predicted the amount of spatial language that children produced themselves, as well as their spatial reasoning competencies. Children who heard more spatial talk produced more spatial language and performed significantly better on a spatial task.

A growing body of research shows how spatial reasoning flourishes when play involves puzzles, building with blocks, or shape sorters (Bower et al., 2020; Hawes et al., 2015; Levine et al., 2012; Verdine et al., 2014). Chan et. al. (2020), for example, found that both children and caregivers paid more attention to spatial features of objects when playing with blocks than when playing with a kitchen playset, where the spatial features were less salient.

Everyday routines and activities are full of opportunities to explore math-related concepts. Clapping to the beat of music and following along with patterns in the lyrics or tempo, sorting clean laundry or toys by color as they are put away, counting ingredients for a recipe, or matching containers and their lids when straightening up the kitchen are moments that naturally lend themselves to math talk and discovery (Development and Research in Early Mathematics Education, 2020; Geist et al., 2012).

As previously noted, there are pervasive disparities in mathematical knowledge and skills that vary systematically with race, SES, and gender. They are apparent as early as preschool and predict achievement gaps during the school-age years (Jordan & Levine, 2009; Levine et al., 2010). Research has shown that by the age of four, children from low-income families fall an average of 7 months behind their more advantaged peers in terms of mathematical knowledge (Starkey et al., 2004). In regard to gender disparities, there has been a noted tendency for males to outperform females on mental rotation tasks (e.g., puzzle play) in childhood and even throughout adulthood (Levine et al., 2016), while females tend to outperform males on literacy skills (Reilly, Neumann, and Andrews, 2018).

Many researchers believe that these knowledge and skill differences can be attributed to communication and activity patterns in children's home learning environments. A recent study, for example, revealed gender differences in the amount of spatial language toddlers hear from their parents (Pruden & Levine, 2017). Toddler boys in the study were more likely than girls to hear and utter spatial language that described the size, shape, and spatial properties of objects, laying foundations for more sophisticated spatial reasoning during the school years and beyond.

Taken together, these findings strongly suggest that parents and other caregivers can help grow children's emergent mathematical abilities. Parents of young children tend to prioritize language-related activities over math activities (Barbarin et al., 2008). This makes it all the more important to inform and support them to incorporate math-related themes into their daily routines, conversations, and activities.

Explore through Movement and Play

Exploring through movement and play encourages curiosity, exploration, and discovery, and supports the development of motor skills and a healthy body.

Children are naturally active, curious, and playful. Play is the work of childhood and is essential for well-being and learning. A variety of animal species have been observed at play, demonstrating how deeply rooted play is in our psychology and as a modality for experimentation and learning.

Yet, despite—or perhaps because of—the centrality of play to childhood, the term has been a challenge to define for researchers and philosophers (Zosh et al., 2018). Yogman et al. (2018) note that "there is a growing consensus that it is an activity that is intrinsically motivated, entails active engagement, and results in joyful discovery"(p. 2). Most definitions of play emphasize that it is child-led, but Zosh et al. (2018) note that there is also an important role for adult scaffolding, with play existing on a "spectrum," from "free play (no guidance or support) to guided play and games (including purposeful adult support while maintaining playful elements)" (p. 1).

Play provides opportunities for physical movement, social engagement and communication, exploration and experimentation, risk-taking and problem-solving, and creative expression. As such, play is linked with a range of positive outcomes in the areas of executive functioning, language development, early mathematical and STEM development, social-emotional development, and physical health (see Yogman et al., 2018, and Zosh et al., 2018, for reviews). In addition, theory and evidence suggest that the intrinsic motivation and joy derived from play enhance learning (Zosh et al., 2018).

There are many types of play, each of which confers opportunities for learning and development. We highlight three broad categories that Yogman and colleagues describe (2018): social or pretend play, object play, and physical play.

Social or Pretend Play. The earliest play takes the form of joyful, reciprocal interactions (e.g., laughing and responding to verbalizations, peekaboo) between the parent and child. They promote a loving connection and set the stage for language, social, emotional, and cognitive development (Yogman et al., 2018). As the infant develops, social play may include the adult providing scaffolding (e.g., verbal cues, modeling, providing information or asking questions) to facilitate the child's engagement and learning beyond what they could accomplish on their own (Yogman et al., 2018; Zosh et al., 2018).

When the child begins to explore and play more independently, they engage in "social referencing," periodically looking back toward the adult as a secure base and source of reassurance (Yogman et al., 2018).

Pretend and social play emerge as the toddler develops cognitive skills and social awareness (pretend play becomes more elaborate during the preschool years). Pretend play, alone or with others, supports executive functioning as the child works to establish and then regulate their behavior in accordance with the parameters of the imagined scenario (Yogman et al., 2018). Social play with peers offers additional opportunities for the development of self-regulation, problem-solving, and social skills as children engage with one another to keep the play on track (Yogman et al., 2018). During social play, children and their partners "each contribute to the conversation in such a way that it helps construct new shared knowledge... in other words, social interaction is, in itself, a mechanism for learning" (Zosh et al., p. 6).

Object Play. "Learning requires that knowledge generation is an iterative process in which a child uses what he or she knows to generate new hypotheses, tests those hypotheses..., and updates his or her understanding based on those tests" (Zosh et al., 2018, p. 7). Object play provides opportunities for hands-on investigation and learning. Infants explore the properties of objects by putting them in their mouths, examining them with their hands, and looking at them, triangulating among these experiences to make inferences (Clearfield et al., 2014). The sophistication of early object exploration has been found to predict later cognitive development in areas such as attention and problem-solving (Clearfield et al., 2014). Learning is driven by interest: infants have been shown to learn most about the features of objects in which they express interest by pointing (Begus et al., 2014). Over time, object play becomes increasingly complex, involving more manipulation, tool use, and construction (Marcinowski et al., 2019). Research has shown play with blocks, puzzles, and shape sorters to be associated with later spatial reasoning and math skills (Bower et al., 2020), with adults providing key scaffolding in the form of
spatial language and gesture as they work toward a shared goal with their child (e.g., building a tower; Verdine et al., 2014).

Physical Play. Physical play and movement support the development of motor skills, coordination, and overall physical health (Yogman et al., 2018), as well as cognitive, social-emotional, and language development. With each new physical milestone—from reaching and sitting to crawling and walking—the child acquires new ways to explore, act on their environment, and engage with caregivers and peers (for review, see Needham & Libertus, 2011). During the toddler years, rough-and-tumble play provides opportunities for assessing risk and testing one's limits (Yogman et al., 2018, p. 5). Young children experience a sense of mastery, joy, and freedom as they gain new skills and move their bodies.

Caregivers facing social and economic disadvantages may have fewer opportunities to play with their children because of several circumstances. These include time constraints, being preoccupied with meeting material needs or coping with other stressful situations, a lack of safe outdoor places to play, or a perception that the best toys are ones they cannot afford (Milteer & Ginsburg, 2012).

And yet, play supports relational and psychological wellness for both children and parents. It fosters pleasurable interactions that support healthy and loving connections. Not to be underestimated is that it also provides parents with a window into their children's interests and concerns. Play even appears to help mitigate the effects of toxic stress on children and reduce parents' feelings of stress (see Yogman et al., 2018 for examples). It is therefore important to ensure that caregivers are aware of the benefit of play and approach it with the intentionality and joy that it warrants.

Read and Discuss Stories

Reading and discussing stories engages children in thinking and builds their knowledge, reasoning, and early literacy skills

Shared book reading provides an important context for young children's language and literacy development. It introduces words, concepts, and forms of discussion and reasoning that they might not encounter in other activities (Tamis-LeMonda et al., 2019).

Empirical research has shown repeatedly that the amount of time spent reading and the nature of interactions during reading predict children's later cognitive and language development (e.g., Bus et al., 1995; Sénéchal et al., 1996). These findings appear consistently across studies of different demographic groups and highlight the critical importance of early reading for children at risk of academic difficulties (e.g., Britto & Brooks-Gunn, 2001; Raikes et al., 2006; Van Kleeck et al., 1997). Shared book reading also confers many psychosocial benefits, such as improving the parent-child relationship and reducing parental stress, and this holds true irrespective of a family's race or socioeconomic status (Xie et al., 2018).

Consequently, the quality of the home literacy environment has important implications for children's development. The frequency of book reading as well as the number and diversity of books infants and toddlers are exposed to predict developmental outcomes. In terms of frequency, daily reading provides a "strong and direct" influence on young children's development (Raikes et al., 2006, p. 944). In a longitudinal study of a large, ethnically diverse sample of low-income families with infants and toddlers, Raikes et al. (2006) reported an association between the frequency of reading and children's language and cognitive development at 14 and 24 months. Furthermore, daily reading during the first two years remained predictive of language and cognitive skills at 36 months (Raikes et al., 2006).

In addition to reading often, reading a broad assortment of books provides opportunities to showcase the words young children are learning in various grammatical contexts (Dickinson et al., 2012). Thus, the more books children read with their caregivers the more likely they are to encounter new vocabulary words in diverse contexts and to be better equipped to then utilize these words in appropriate circumstances. Reading a diverse array of books also increases the likelihood that children are exposed to relatively rare words, for example, relating to mathematics or science, that tend not to be part of the normal verbal input caregivers provide to their children (Goldstein et al., 2016; Hendrix et al., 2019).

The quality of interactions during book reading also matters. Parents who make reading enjoyable rather than being overly concerned with skill building are more likely to instill a love of reading that persists throughout childhood and beyond (Baker et al., 1997).

Another important consideration in fostering high-quality book reading is to ensure that it is tailored to a child's developmental needs and capacities. Numerous studies highlight the impact of early reading on children's later language competencies, including their receptive and expressive vocabularies (Karrass & Braungart-Ricker, 2005: Muhinyi & Rowe, 2019). Infants reap the greatest benefit from shared book reading that focuses on the pictures featured in books, which helps enrich their receptive vocabularies (Rowe & Zuckerman, 2016). Much like the approach taken when children encounter new or familiar objects during daily excursions, caregivers can help solidify the associations between words and pictures of various phenomena found in books by pointing to the pictures and labeling them.

As children's receptive and expressive vocabularies expand with age, they are more capable of engaging with the actual text of the books caregivers read to them and having conversations about the ideas under examination (Demir-Lira et al., 2019; Rowe & Zuckerman, 2016). Dialogic reading or "comments and questions that go beyond the written word and connect the story to child experiences," is an important characteristic of joint reading interactions between toddlers and their caregivers (Munzer et al., 2019, p. 2).

The richness of discussions during shared book reading tends to predict children's later literacy skills. In a longitudinal study of shared book reading, Haden et al. (1996) observed that 40-month-old children of mothers who expanded on the text—largely by making connections to general knowledge, encouraging their children to make inferences and predictions, and confirming their children's comments—performed better on literacy tasks at 58 and 70 months of age compared to children whose mothers simply read and described the text.

However, not all modalities of books lend themselves well to dialogic reading. Though electronic books have become widely popular, a recent study demonstrates some pitfalls associated with using e-books during joint reading interactions (Munzer et al., 2019). The findings reveal that parents and toddlers were less likely to engage in high-quality dialogic reading practices and produced fewer verbalizations about the story when reading an e-book compared to a print book. Still, using e-books can add value, especially if parents apply dialogic strategies.

Families differ a great deal in their reading behaviors. Many report reading to young children with some regularity. Of the 2,581 low-income mothers in Raikes et al.'s (2006) study, 48% reported reading daily to their children at 14 months, with 55% reading daily by 24 months—figures that are similar to national averages. They report differential reading patterns by race and ethnicity, with Hispanic and African American parents reading less frequently to their children than white parents. In a national survey, Yarosz and Barnett (2001) noted similar findings regarding racial and ethnic patterns in reading habits.

There is also significant variability in the types of interactions that occur during reading. Even within demographic groups, some mothers constantly elaborate on the text and interact with their children while others rarely do (Haden et al., 1996). In addition, there are ethnic differences in regard to the extent to which mothers gesture during book reading as well as the referential and regulatory utterances they communicated to their infants—practices that predict later outcomes like receptive and expressive language (Tamis-LeMonda et al., 2012).

Equipping parents with more interactive approaches to reading with young children (for example, dialogic reading) can improve literacy outcomes across demographic groups (Valdez-Menchaca & Whitehurst, 1992; Whitehurst et al., 1988) and enhance social-emotional development (Mendelsohn et al., 2018).

Conclusion

Evidence presented above shows that each of the five Principles is strongly grounded in a body of research literature. It establishes that families' everyday routines, which most of us might take for granted, matter fundamentally to early brain development. Many of the practices that embody the Principles are things that caregivers do already, but not as intentionally as they might if they understood the potential impacts. The purpose of The Basics movement is to help community stakeholders and families with infants and toddlers tap into the power they have to shape children's futures. The intention is that every family should have the information and support they need to make the most of the knowledge that contemporary science has made available.

Epilogue: Respect for Culture

Reasonable people may be concerned about proposing The Basics Principles to families in communities with different traditions of childrearing. After all, they may say, variation in norms and practices across history reflects how societies and communities within them have adapted to survive and thrive *within their own distinct circumstances.*

We agree that societies survive through adaptation and that the specific practices through which families implement universal principles may vary depending upon local norms and circumstances. Even for a universally important concept such as responsiveness, cross-cultural research has shown differences in the practices used to enact it.

We celebrate diversity and cultural expression which is an important part of child and family identity and well-being. However, at the same time, we want to ensure that all children are prepared for school and life, and we know that when a child does not routinely experience all five Principles during their pre-kindergarten years they can struggle to keep up with their peers who do.

Our vantage point is the third decade of the 21st century, when the context of our lives is changing irreversibly. In the U.S. and around the world, flourishing will depend upon capabilities that The Basics Principles can help cultivate. The evidence presented above suggests that if a family of any racial, ethnic, or socioeconomic group routinely employs practices aligned with The Basics Principles in caring for their child, doing so will have important positive impacts upon multiple domains of the child's early development and raise their prospects for success in a 21st-century society.

References

Introduction

Cunha, F., & Heckman, H. J., (2007). The technology of skill formation. *American Economic Review, 97*(2), 31–47.

Halle, T., Forry, N., Hair, E., Perper, K., Wandner, L., Wessel, J., & Vick, J. (2009). *Disparities in early learning and development: Lessons from the Early Childhood Longitudinal Study–Birth Cohort (ECLS-B).* Washington, DC: Child Trends.

McKinsey & Company (2009). *The economic impact of the achievement gap in America's schools: Summary of findings.* http://dropoutprevention.org/wp-content/uploads/2015/07/ACHIEVEMENT_GAP_REPORT_20090512.pd.

National Scientific Council on the Developing Child (2004). *Young children develop in an environment of relationships.* Working Paper No. 1. http://www.developingchild.net.

National Scientific Council on the Developing Child (2007). *The timing and quality of early experiences combine to shape brain architecture.* Working Paper No. 5. www.developingchild.harvard.edu.

Peterson, J. W., Loeb, S., & Chamberlain, L. J. (2018). The intersection of health and education to address school readiness of all children. *Pediatrics, 142*(5), 1-20.

Phillips, M., Crouse, J., Ralph, J. (1998). Does the black-white test score gap widen after children enter school? In Jencks, C., and Phillips, M., (Eds.) *The black-white test score gap* (pp. 229-272). Washington, DC: Brookings Institution Press.

Tamis-LeMonda, C. S., Luo, R.,McFadden, K. E., Bandel, E., & Vallotton, C. (2017). The early home learning environment predicts children's 5th grade academic skills. *Applied Developmental Science*, 1-17.

Yasnitsky, A. (2018). *Vygotsky: An Intellectual Biography.* New York: Routledge.

Maximize Love, Manage Stress

Ainsworth, M. D. S., & Bell, S. M. (1970). Attachment, exploration, and separation: Illustrated by the behavior of one-year-olds in a strange situation. *Child Development, 41*(1), 49-67.

Bernier, A., Carlson, S.M., & Whipple, N. (2010). From external regulation to self-regulation: Early parenting precursors of young children's executive functioning. *Child Development, 81*, 326–339.

Blair, C., & Raver, C. (2016). Poverty, stress, and brain development: New directions for prevention and intervention. *Academic Pediatrics, 16*(3), S30-S36.

Bohr, Y., Putnick, D., Lee, Y., & Bornstein, M. (2018). Evaluating caregiver sensitivity to infants: Measures matter. *Infancy, 23*(5), 730-747.

Bradley, B., Davis, T. A., Kaye, J. & Wingo, A. (2013). Developmental social factors as promoters of resilience in childhood and adolescence. In M. Kent, M. C. Davis, & J. W. Reich (Eds), *The resilience handbook: Approaches to stress and trauma* (pp. 197-208). New York: Routledge.

Coley, R., Lewin-Bizan, S., & Carrano, J. (2011). Does early paternal parenting promote low-income children's long-term cognitive skills? *Journal of Family Issues, 32*(11), 1522-1542.

Center on the Developing Child at Harvard University. (2007). A science-based framework for early childhood policy: Using evidence to improve outcomes in learning, behavior, and health for vulnerable children. www.developingchild.harvard.edu

Center on the Developing Child at Harvard University. (n.d.). *Toxic stress*. developingchild.harvard.edu/science/key-concepts/toxic-stress/

Committee on Psychosocial Aspects of Child and Family Health, Committee on Early Childhood, Adoption, and Dependent Care, and Section on Developmental and Behavioral Pediatrics. (2012). Early childhood adversity, toxic stress, and the role of the pediatrician: Translating developmental science into lifelong health. *Pediatrics, 129*(1), 224-231.

Gunderson, E., Sorhagen, N., Gripshover, S., Dweck, C., Goldin-Meadow, S., & Levine, S. (2018). Parent praise to toddlers predicts fourth grade academic achievement via children's incremental mindsets. *Developmental Psychology, 54*(3), 397-409.

Kalil, A. (2014). Addressing the parenting divide to promote early childhood development for disadvantaged children. In M. S. Kearney & B. H. Harris (Eds.), *Policies to address poverty in America* (pp. 29-36). Brookings Institution. www.hamiltonproject.org/assets/files/policies_address_poverty_in_america_full_book.pdf

Landry, S. H., Smith, K. E., Swank, P. R., & Guttentag, C. (2008). A responsive parenting intervention: The optimal timing across early childhood for impacting maternal behaviors and child outcomes. *Developmental Psychology, 44*(5), 1335-1353.

Lange, B. C. L., Dau, A. L., B. T., Goldblum, J., Alfano, J., & Smith, M. V. (2016). A mixed methods investigation of the experience of poverty among a population of low-income parenting women. *Community Mental Health Journal, 53*, 832-841.

Nachmas, M., Gunnar, M. G., Mangelsdorf, S., Parritz, R. H., & Buss, K. (1996). Behavioral inhibition and stress reactivity: The moderating role of attachment security. *Child Development, 67*, 508-522.

National Research Council and Institute of Medicine. (2000). *From neurons to neighborhoods: The science of early childhood development.* Committee on Integrating the Science of Early Childhood Development. J. P. Shonkoff & D. A. Phillips (Eds.). Board on Children, Youth, and Families, Commission on Behavioral and Social Sciences and Education. Washington, DC: National Academy Press.

Rowe, M., & Zuckerman, B. (2016). Word gap redux: Developmental sequence and quality. *JAMA Pediatrics, 170*(9), 827-828.

Smith, M. V., Kruse, A., Weir, A., Goldblum, J. (2013). Diaper need and its impact on child health. *Pediatrics, 132*(2):253-259.

Sparrow, J. (2013). Newborn behavior, parent-infant interaction, and developmental change processes: Research roots of developmental, relational, and systems-theory-based practice. *Journal of Child and Adolescent Psychiatric Nursing, 26*(3), 180-185.

Talk, Sing, and Point

Capone, N. C. (2007). Tapping toddlers' evolving semantic representation via gesture. *Journal of Speech, Language, and Hearing Research*, 50(3), 732-744.

Cirelli, L. K., & Trehub, S. E. (2020). Familiar songs reduce infant distress. *Developmental Psychology*, 56(5), 861–868.

Dickenson, D. K., Griffith, J. A., Golkinoff, R. M., & Hirsh-Pasek, K. (2011). How reading books fosters language development around the world. *Child Development Research*, 2012.

Dunst, C. J., Meter, D., & Hamby, D. W. (2011). Relationship between young children's nursery rhyme experiences and knowledge and phonological and print-related abilities. *CELLReviews*, *4*(1).

Fernald, A., Marchman, V. A., & Weisleder, A. (2013). SES differences in language processing skill and vocabulary are evident at 18 months. *Developmental Science*, *16*(2), 234-248.

Gilkerson, J., Richards, J. A., Warren, S. F., Oller, D. K., Russo, R., & Vohr, B. (2018). Language experience in the second year of life and language outcomes in late childhood. *Pediatrics, 142*(4).

Goldin-Meadow, S. (2009). How gesture promotes learning throughout childhood. *Child Development Perspectives, 3*, 106-111.

Goldin-Meadow, S., Alibali, M. W., & Church, R. B. (1993). Transitions in concept acquisition: Using the hand to read the mind. *Psychological Review, 100*(2), 279-297.

Golinkoff, R., Hoff, E., Rowe, M., Tamis-LeMonda, C., & Hirsh-Pasek, K. (2019). Language matters: Denying the existence of the 30-million-word gap has serious consequences. *Child Development, 90*(3), 985-992.

Hart, B., & Risley, T. R. (1995). *Meaningful differences in the everyday experience of young American children.* Baltimore, MD: Brookes Publishing.

Hirsch-Pasek, K., Adamson, L., Bakeman, R., Owen, M. T., Golinkoff, R. M., Pace, A., Yust, P. K. S. & Suma, K. (2015). The contribution of early communication quality to low-income children's language success. *Psychological Science*, 26, 1071-1083.

Hoff, E. (2006). How social contexts support and shape language development. *Developmental Review, 26*(1), 55-88.

Kuhl, P. K. (2007). Is speech learning 'gated' by the social brain? *Developmental Science, 10*, 110-120.

Kuhl, P. K., Tsao, F, M., & Liu, H. M. (2003). Foreign-language experience in infancy: Effects of short-term exposure and social interaction on phonetic learning. *Proceedings of the National Academy of Sciences, 100*, 9096-9101.

LeBarton, E. S., Goldin-Meadow, S., & Raudenbush, S. (2015). Experimentally-induced increases in early gesture lead to increases in spoken vocabulary. *Journal of Cogn Dev, 16*(2), 199-220.

Nakata, T., & Trehub, S. E. (2004). Infants' responsiveness to maternal speech and singing. *Infant Behavior & Development, 27*, 455-464.

Pan, B. A., Rowe, M. L., Singer, J. D., & Snow, C. E. (2005). Maternal correlates of growth in toddler vocabulary production in low-income families. *Child Development, 76*, 763–782.

Ridge, K., Weisberg, D., Ilgaz, H., Hirsh-Pasek, K., & Golinkoff, R. (2015). Supermarket speak: Increasing talk among low-socioeconomic status families. *Mind, Brain, and Education, 9*(3), 127-135.

Roseberry, S., Hirsh-Pasek, K., & Golinkoff, R. M. (2014). Skype me! Socially contingent interactions help toddlers learn language. *Child Development, 85*(3), 956-970.

Rowe, M. L., Goldin-Meadow, S. (2009). Differences in early gesture explain SES disparities in child vocabulary size at school entry. *Science*, 323, 951-953.

Rowe, M. L., Leech, K. A., & Cabrera, N. (2017). Going beyond input quantity: Wh-questions matter for toddlers' language and cognitive development. *Cognitive Science*, 41, 162-179.

Rowe, M., & Zuckerman, B. (2016). Word gap redux: Developmental sequence and quality. *JAMA Pediatrics*, *170*(9), 827-828.

Snow, C. (2017). The role of vocabulary versus knowledge in children's language learning: A fifty-year perspective. *Journal for the Study of Education and Development, 40*(1), 1-18.

Snow, C. E., Burns, S., & Griffin, P. (1998). *Preventing reading difficulties in young children.* Washington, DC: National Academy Press.

Tamis-LeMonda, C. S., Custode, S., Kuchirko, Y., Escobar, K., & Lo, T. (2018). Routine language: Infant-directed speech during everyday activities. *Child Development, 9*(6), 2135-2152.

Tamis-LeMonda, C. S., Kuchirko, Y., & Song, L. (2014). Why is infant language learning facilitated by parental responsiveness? *Current Directions in Psychological Science, 23*(2).

Tamis-LeMonda, C. S., Song, L., Levell, A. S., Kahana-Kalman, R., & Yoshikawa, H. (2012). Ethnic differences in mother-infant language and gestural communications are associated with specific skills in infants. *Developmental Science, 159*(3), 384-397.

Uccelli, P., Demir-Lira, O. E., Rowe, M. L., Levine, S., & Goldin-Meadow, S. (2018). Children's early decontextualized talk predicts academic language proficiency in midadolescence. *Child Development, 90*(5), 1650-1663.

Vasilyeva, M., Waterfall, H., Huttenlocher, J. (2008). Emergence of syntax: Commonalities and differences across children. *Developmental Science, 11*(1), 84-97.

Vernon-Feagans, L., Hammer, C. S., Miccio, A., & Manlove, E. (2002). Early language and literacy skills in low-income African American and Hispanic children. In S. B. Neuman & D. K. Dickinson (Eds.) *Handbook of early literacy research, Volume 1.* New York: The Guilford Press.

Count, Group, and Compare

Barbarin, O. A., Early, D., Clifford, R., Bryant, D., Frome, P., Burchinal, M., Howes, C., & Pianta, R. (2008). Parental conceptions of school readiness: Relation to ethnicity, socioeconomic status, and children's skills. *Early Education & Development, 19*(5), 671-701.

Bower, C., Odean, R., Verdine, B., Medford, J., Marzouk, M., Golinkoff, R., & Hirsh-Pasek, K. (2020). Associations of 3-year-olds' block-building complexity with later spatial and mathematical skills. *Journal of Cognition and Development*, 1-23.

Chan, J., Praus-Singh, T., & Mazzocco, M. (2020). Parents' and young children's attention to mathematical features varies across play materials. *Early Childhood Research Quarterly*, 50, 65-77.

Chen, J., Hynes-Berry, M., Abel, B., Sims, C., & Ginet, L. (2017). *Nurturing mathematical thinkers from birth: The why, what, and how. ZERO TO THREE*, 37(5), 23-26.

Development and Research in Early Mathematics Education (2020). DREME Family Math. familymath.stanford.edu/math-snacks/

Geist, K., Geist, E. A., & Kuznik, K. (2012). The patterns of music: Young children learning mathematics through beat, rhythm, and melody. *Young Children*, 67(1), 74-79.

Ginsburg, H., Lee, J., & Boyd, J. (2008). Mathematics education for young children: What it is and how to promote it. *Social Policy Report*, 22(1), 1-24.

Gunderson, E. A., & Levine, S. C. (2011). Some types of parent number talk count more than others: Relation between parents' input and children's number knowledge. *Developmental Science, 14*(5), 1021-1032.

Gunderson, E., Ramirez, G., Beilock, S., & Levine, S. (2012). The relation between spatial skill and early number knowledge: The role of the linear number line. *Developmental Psychology, 48*(5), 1229-1241.

Hawes, Z., Tepylo, D., & Moss, J. (2015). Developing spatial thinking: Implications for early mathematics education In B. Davis and Spatial Reasoning Study Group (Eds.). *Spatial reasoning in the early years: Principles, assertions and speculations* (pp. 29-44). New York: Routledge.

Izard, V., Sann, C., Spelke, E. S., & Streri, A. (2009). Newborn infants perceive abstract numbers. *Proceedings of the National Academy of Sciences, 106*(25), 10382–10385.

Jordan, N. C., & Levine, S. C. (2009). Socio-economic variation, number competence, and mathematics learning difficulties in young children. *Developmental Disabilities Research Reviews*, 15, 60-68.

Levine, S., Foley, A., Lourenco, S., Ehrlich, S., & Ratliff, K. (2016). Sex differences in spatial cognition: Advancing the conversation. *Wiley Interdisciplinary Reviews: Cognitive Science, 7*(2), 127-155.

Levine, S. C., Gunderson, E. A., & Huttenlocher, J. (2011). Number development in context: Variations in home and school input during the preschool years. In N. L. Stein & S. W. Raudenbush (Eds.), *Developmental Cognitive Science Goes to School* (pp. 189-202). New York: Taylor and Francis.

Levine, S., Ratliff, K., Huttenlocher, J., & Cannon, J. (2012). Early puzzle play: A predictor of preschoolers' spatial transformation skill. *Developmental Psychology*, 48(2), 530-542.

Levine, S. C., Suriyakham, L. W., Rowe, M. L., Huttenlocher, J., & Gunderson, E. A. (2010). What counts in the development of young children's number knowledge? *Developmental Psychology*, 46(5), 1309–1319.

Pruden, S., & Levine, S. (2017). Parents' spatial language mediates a sex difference in preschoolers' spatial-language use. *Psychological Science*, 28(11), 1583-1596.

Pruden, S., Levine, S., & Huttenlocher, J. (2011). Children's spatial thinking: Does talk about the spatial world matter? *Developmental Science*, 14(6), 1417-1430.

Reilly, D., Neumann, D.L., & Andrews, G. (2018). Gender differences in reading and writing achievement: Evidence from the National Assessment of Educational Progress (NAEP). *American Psychologist*, 74(4), 445-458.

Starkey, P., Spelke, E. S., & Gelman, R. (1990). Numerical abstraction by human infants. *Cognition, 36*, 97-127.

Verdine, B. N., Golinkoff, R. M., Hirsh-Pasek, K., & Newcombe, B. S. (2014). Finding the missing piece: Blocks, puzzles, and shapes fuel school readiness. *Trends in Neuroscience and Education, 3*(1), 7-13.

Explore through Movement and Play

Begus, K., Gliga, T., & Southgate, V. (2014). Infants learn what they want to learn: Responding to infant pointing leads to superior learning. *PLoS ONE, 9*(10).

Bower, C., Odean, R., Verdine, B. N., Medford, J. R., Marzouk, M., Golinkoff, R. M. & Hirsh-Pasek, K. (2020). Associations of 3-year-olds' block building complexity with later spatial and mathematical skills. *Journal of Cognition and Development*. DOI:10.1080/15248372.2020.1741363

Clearfield, M. W., Bailey, L., Jenne, H. K., Stanger, S. B., & Tacke, N. (2014). Socioeconomic status affects oral and manual exploration across the first year. *Infant Mental Health Journal, 35*(1), 63-69.

Marcinowski, E. C., Nelson, E., Campbell, J. M., & Michel, G. F. (2019). The development of object construction from infancy through toddlerhood. *Infancy*, 24(3), 368-391.

Milteer, R. M., Ginsburg, K. R. and the Council on Communications and Media and Committee on Psychosocial Aspects of Child and Family Health. (2012). The importance of play in promoting healthy child development and maintaining strong parent-child bond: Focus on children in poverty. *Pediatrics*, 129(1).

Needham, A., & Libertus, K. (2011). Embodiment in early development. *Wiley Interdisciplinary Reviews: Cognitive Science*, 2, 117-123.

Verdine, B. N., Golinkoff, R. M., Hirsh-Pasek, k., & Newcombe, B. S. (2014). Finding the missing piece: Blocks, puzzles, and shapes fuel school readiness. *Trends in Neuroscience and Education*, 3(1), 7-13.

Yogman, M., Garner, A., Hutchinson, J., Hirsh-Pasek, K., & Golinkoff, R. M. AAP Committee on Psychosocial Aspects of Child and Family Health, AAP Council on Communications and Media (2018). The power of play: A pediatric role in enhancing development in young children. *Pediatrics*, 142(3).

Zosh, J.M., Hirsh-Pasek, K., Hopkins, E.J., Jensen, H., Liu, C., Neale, D., Solis, S.L. & Whitebread, D. (2018). Accessing the inaccessible: Redefining play as a spectrum. *Frontiers in Psychology*, 9, 1124.

Read and Discuss Stories

Baker, L., Scher, D., & Mackler, K. (1997). Home and family influences on motivations for reading. *Educational Psychologist*, 32(2), 69-82.

Britto, P. R. & Brooks-Gunn, J. (2001). Beyond shared book reading: Dimensions of home literacy and low-income African-American preschoolers' skills. *New Directions for Child Development*, 92, 73-89.

Bus, A. G., van IJzendoorn, M. H., & Pellegrini, A. D. (1995). Joint book reading makes for success in learning to read: A meta-analysis on intergenerational transmission of literacy. *Review of Educational Research*, 65, 1-21.

Demir-Lira, Ö. E., Applebaum, L., Goldin-Meadow, S., & Levine, S. (2019). Parents' early book reading to children: Relation to children's later language and literacy outcomes controlling for other parent language input. *Developmental Science*, 22(3).

Dickenson, D. K., Griffith, J. A., Golkinoff, R. M., & Hirsh-Pasek, K. (2011). How reading books fosters language development around the world. *Child Development Research*, 2012, 1-15.

Goldstein, A., Cole, T., & Cordes, S. (2016). How parents read counting books and non-numerical books to their preverbal infants: An observational study. *Frontiers in Psychology*, 7, 1100.

Karrass, J., & Braungart-Rieker, J. (2005). Effects of shared parent–infant book reading on early language acquisition. *Journal of Applied Developmental Psychology*, 26(2), 133-148.

Haden, C. A., Reese, E., & Fivush, R. (1996). Mothers' extratextual comments during storybook reading: Stylistic differences over time and across texts. *Discourse Processes*, 21(2), 135-169.

Hendrix, N. M., Hojnoski, R. L., & Missall, K. N. (2019). Shared book reading to promote math talk in parent–child dyads in low-income families. *Topics in Early Childhood Special Education*, 39(1), 45–55.

Mendelsohn, A., Cates, C., Weisleder, A., Berkule Johnson, S., Seery, A., Canfield, C., . . . Dreyer, B. (2018). Reading aloud, play, and social-emotional development. *Pediatrics*, 141(5).

Muhinyi, A., & Rowe, M. (2019). Shared reading with preverbal infants and later language development. *Journal of Applied Developmental Psychology*, 64.

Munzer, T., Miller, A., Weeks, H., Kaciroti, N., & Radesky, J. (2019). Differences in parent-toddler interactions with electronic versus print books. *Pediatrics*, 143(4).

Raikes, H., Pan, B.A., Luze, G., Tamis-LeMonda, C.S., Brooks-Gunn, J., Constantine, J., Tarullo, L.B., Raikes, H.A., & Rodriguez, E.T. (2006). Mother-child book reading in low-income families: Correlates and outcomes during the first three years. *Child Development*, 77, 924-953.

Rowe, M., & Zuckerman, B. (2016). Word gap redux: Developmental sequence and quality. *JAMA Pediatrics*, 170(9), 827-828.

Sénéchal, M., LeFevre, J., Hudson, E., & Lawson, P. (1996). Knowledge of storybooks as a predictor of young children's vocabulary. *Journal of Educational Psychology*, 88, 520-536.

Tamis- LeMonda, C., Custode, S., Kuchirko, Y., Escobar, K., & Lo, T. (2019). Routine language: Speech directed to infants during home activities. *Child Development*, 90(6), 2135-2152.

Tamis-LeMonda, C. S., Song, L., Levell, A. S., Kahana-Kalman, R., & Yoshikawa, H. (2012). Ethnic differences in mother-infant language and gestural communications are associated with specific skills in infants. *Developmental Science*, 159(3), 384-397.

Valdez-Menchaca, M. C., & Whitehurst, G. J. (1992). Accelerating language development through picture book reading: A systematic extension to Mexican day care. *Developmental Psychology*, 28(6), 1106-1114.

Van Kleeck, A., Gillam, R. B., Hamilton, L., & McGrath, C. (1997). The relationship between middle-class parents' book-sharing discussion and their preschoolers' abstract language development. *Journal of Speech, Language, and Hearing Research*, 40, 1261-1271.

Whitehurst, G. J., Falco, F. L., Lonigan, C. J., Fischel, J. E., DeBaryshe, B. D., Valdez-Menchaca, M. C., & Caulfield, M. (1998). Accelerating language development through picture book reading. *Developmental Psychology*, 24(4), 552-559.

Yarosz, D. J., & Barnett, W. S. (2001). Who reads to young children?: Identifying predictors of family reading activities. *Reading Psychology*, 22, 67-81.

Xie, Q., Chan, C. H. Y., Ji, Q., & Chan, C. L. W. (2018). Psychosocial effects of parent-child book reading interventions: A meta-analysis. *Pediatrics*, 141(4).

Contact: info@thebasics.org
www.thebasics.org