

Contextual Support in the Home for Children's Early Literacy Development

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Abstract

The home literacy environment (HLE) refers to the physical, interpersonal, and emotional/motivational factors in the home that have been found to be important for children's literacy development. In this paper, the emergence of HLE research, its conceptualizations, and the effects of HLE factors are reviewed with an emphasis on the relations between HLE and children's early literacy skills. Challenges faced by HLE researchers are also discussed with particular reference to three issues: privacy sensitivity, measure validity, and intervention fidelity. This paper also identifies directions for future research.

Keywords: home literacy environment, early literacy, research challenges

Literacy practices have long existed in the home setting. However, not until the 1960s did it draw significant attention from researchers. Since then, numerous studies have found that contextual factors in the home can affect children's early literacy skills (Arnold & Whitehurst, 1994; Bus et al., 1995; Justice & Ezell, 2000; Lynch et al., 2006; Purcell-Gates, 1996; Sénéchal et al., 1998).

Early literacy refers to the precursor stage of conventional literacy skills. The National Early Literacy Panel identified 11 early literacy skills as being moderately related to later literacy achievement with or without controlling socioeconomic status (SES) and IQ (Lonigan & Shanahan, 2008). They are oral language, alphabetic knowledge, phonological awareness, rapid automatic naming of letters or digits, rapid automatic naming of objects or colors, phonological memory, concepts about print, print knowledge, writing or writing names, reading readiness, and visual processing (Lonigan & Shanahan, 2008). Several of these early literacy skills have been widely studied in the literature on home literacy phenomenon (Heilmann et al., 2018; Layes et al., 2020; Lonigan & Milburn, 2017; Lund et al., 2020; Pullen & Justice, 2003). These include: (a) *oral language*—the ability to understand and use spoken language to communicate ideas, usually measured

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through vocabulary, listening comprehension, and aspects of grammar; (b) *alphabet knowledge*—knowledge of letter names and sounds; (c) *phonological awareness*—sensitivity to the fact that words are composed of sound units; (d) *print concepts*—an understanding of the print conventions and concepts, such as reading directionality, book cover, title, and author; (e) *print knowledge*—a mixed concept that consists of letter sounds, letter names, concepts of print, and early decoding; and (f) *letter/name printing*—the ability to write letters and one's name (Harris & Hodges, 1995; Lonigan & Shanahan, 2008; Soifer, 2011).

Although early literacy skills are considered precursors of the conventional literacy skills, the demarcation between the two is fuzzy and vague because the two are not separate states of literacy but connected phases of the same matter with overlap (Whitehurst & Lonigan, 1998). Children's literacy development is not an all-or-nothing phenomenon but evolves on a developmental continuum, beginning at birth (Sénéchal, et al., 2001; Whitehurst & Lonigan, 1998). Furthermore, early literacy skills before school entry can predict children's later reading achievement in their primary school (Sénéchal, 2011; Whitehurst & Lonigan, 1998). Whitehurst and Lonigan (1998) classified early literacy skills into two categories—outside-in skills primarily focused on semantic and syntactic oral language skills, and inside-out skills primarily focused on print knowledge and phonological awareness. They found that children's inside-out skills in kindergarten significantly and directly predicted children's reading achievement in grades one and two, and that their outside-in skills significantly and directly predicted their reading in grade two but was indirectly related to their reading achievement in grade one. Similar results were also reported in Sénéchal's (2011) model, whereby children's vocabulary in kindergarten significantly and positively related to their grade four reading comprehension, while children's phonological awareness, alphabetic knowledge, and invented spelling were significantly related to their word reading ability in grades one and two. Given the importance of early literacy skills prior to school entry for children's later reading development, it is meaningful to facilitate the cultivation of these skills by utilizing supporting familial factors in children's early years, specifically the factors that can support children's early literacy skills in their home environment.

The purpose of this paper is to provide an overview of these familial factors and their impact on children's early literacy skills. Typically developing, English-speaking children were mainly focused on in this review paper because this group is the most heavily researched in the literature, and this paper aims to reflect the status quo of research on this topic. Most of the articles reviewed in this paper focused on English-speaking, typically developing children and their early literacy skills before school entry. A few available studies on bilingual or non-English-speaking children or children at risk (e.g., children from low-income families or having been in language delay) were also included in the paper if they informed

the research on this topic. The language use and risk status of participants in these studies, which included bilingual or non-English-speaking children, are specified in this review. First, this paper discusses the conceptualization processes of two main research areas on this topic—the home literacy environment (HLE) and family literacy. Next, we examine different conceptualizations of the HLE. Then, the paper reviews the theoretical and empirical evidence regarding the relations between home factors and children’s literacy outcomes. The paper concludes with a discussion of the challenges and issues in researching the HLE and family literacy programming.

Emergence of HLE and Family Literacy Research

During 1960–1970, research attention shifted from the reading readiness/reading phenomenon toward the role of the family in children’s literacy development. Contrary to the belief that children need to mature to about the age of six to acquire reading skills (Morphett & Washburne, 1931), Durkin (1966) found that many young children could acquire some reading skills before age six and that their reading ability was associated with their family environment: their parents did not believe that they should wait until age six to learn reading, and they actively engaged their children in literacy-related activities. Ten years later, Clark (1976) confirmed Durkin’s finding that young children could pick up certain reading skills before starting school through literacy-related parent-child interaction. Clay (1966) in her doctoral dissertation coined the term *emergent literacy* to describe the language- and literacy-related knowledge that children acquire before coming to school. These findings suggested that young children do not need to wait until age six to learn to read and that acquisition of reading is not an all-or-nothing trick, but a gradually progressive process from an emergent state in a very young age to a more mature state when children are older. Under these new perspectives, the family began to be considered as a possible setting for early literacy development.

In the 1980s, Taylor (1983) coined the term *family literacy* in her book of the same name. This book did not define family literacy precisely, but the implicit definition throughout her seminal ethnographic book focused on the way literacy was being used within families and communities. At the same time, other ethnographers (Heath, 1983; Taylor & Dorsey-Gaines, 1988) also used the sociocultural approach—an approach holding the idea that the culture, society, and people’s experiences shape people’s cognition and the way they act—to document the use of literacy in family and community settings, although not all of them employed the term family literacy. These early ethnographic works revealed that home literacy practice, such as parent-child reading, or children playing with words/letters, is a common phenomenon and takes many forms in the home and

community setting. The ethnographic nature of these works allowed researchers to provide detailed descriptions of the phenomenon and served as the preliminary explorations of the topic. Later, family literacy services or programs acquired a new meaning when researchers and practitioners tried to provide literacy intervention in home settings, and this became the primary meaning of family literacy in the 1990s (Tracey, 1995). From then on, the scope of the term family literacy shifted from a description of literacy events within families and communities to a greater focus on family literacy programming.

A relevant concept that came into use at almost the same time as family literacy was the *home literacy environment* (HLE), which emphasizes the environmental aspects of the literacy phenomenon in familial settings. Leichter (1984) defined HLE as the literacy-related aspects of three factors: (a) physical environment (educational/economic resources and physical arrangements that support literacy); (b) interpersonal interactions about literacy between parents and their children; and (c) the emotional and motivational atmosphere within families (parental aspiration and beliefs about literacy). In his naturalistic study, Teale (1986) described the rich literacy materials (e.g., books, letters, printing guides) in the home and further divided literacy practices into three categories: (a) children's literacy activities with adults or older siblings, (b) children's independent literacy activities, and (c) children's indirect literacy learning through observation of other family members' literacy activities. Later studies (Bingham, 2007; DeBaryshe, 1995; Purcell-Gates, 1996; Sénéchal et al., 1998) employed various conceptualizations of the HLE yet not exceeded the scope established by Teale and Leichter.

Conceptualizations of the Home Literacy Environment

Although Teale (1986) and Leichter (1984) presented clear descriptions of the HLE, these authors wrote only about general categories of the HLE and not about factors specific to the home settings. Driven by interest in different aspects of the HLE, subsequent researchers focused on different home literacy factors, and conceptualizations of the HLE varied greatly across studies (Britto & Brooks-Gunn, 2001; Griffin & Morrison, 1997; Payne et al., 1994). Payne et al. (1994), for example, defined HLE as home reading activities while Griffin and Morrison (1997) conceived HLE as home reading activities and printed materials. In an effort to refine definitions of the HLE, Burgess et al. (2002) reviewed studies and organized conceptualizations of the HLE into six different categories: (a) *overall HLE*, which includes all aspects of the HLE, with the assumption that each aspect is necessary in the association between the HLE and children's literacy outcomes; (b) *limiting environment*, the resources at parents' disposal to provide children with opportunities for literacy learning (using this conceptualization, the HLE could be indexed by measures of social status, parental literacy ability, or parental disposition to provide literacy opportunities); (c) *literacy interface*, literacy

activities whereby parents engage their children in explicit or implicit literacy instruction, and in observational learning opportunities that expose children to the literacy practices or attitudes of their parents; (d) *active HLE*, literacy activities that children actively engage in; (e) *passive HLE*, or observational learning opportunities; and (f) *shared reading*, the “most commonly used measure and conceptualization of the HLE” (p. 413). The authors pointed out that the HLE had also been conceptualized as socioeconomic status (a combined measure of one’s social or economic standing or class, SES), which was not included in their results due to limited sample size. In general, Burgess et al. (2002) found significant correlations between each conceptualization and children’s literacy outcomes including letter knowledge, phonological awareness, and word-reading skills. However, depending on the conceptualization used, the literacy outcome measured, and whether the examined relations were concurrent or longitudinal, the magnitude of relationships was affected. For instance, a study examining the relationship between HLE and children’s oral language might obtain different results from a study focusing on the relationship between HLE and children’s print knowledge. Another example, a study using shared reading as a measure of HLE might find its impact on children’s vocabulary different from a study using the number of reading materials as the proxy measure of HLE. Roberts et al. (2005) compared the predictive ability of an overall measure of the HLE and a measure of several key home literacy practices including shared book reading frequency, maternal book reading strategies, child’s enjoyment of reading, and maternal sensitivity during book reading among three- to five-year-old children from low-income families. They found that the scores obtained by the overall measure had better predictive ability than the measure of home literacy practices. In summary, various definitions of HLE exist in the literature and they do affect the results of the research itself. More research is needed to capture a clear overview of the complex phenomenon of home literacy.

Home Factors and Children’s Early Literacy Development

In this section, studies of the HLE will be reviewed with a focus on the relationship between home literacy factors and children’s early literacy development. The review will be organized according to Leichter’s (1984) categorization: physical environment, interpersonal interactions, and motivational and emotional environment.

Physical Environment

The most commonly reported aspects of the physical environment of the home in the literature are SES and home literacy resources (Aram et al., 2013; Bradley et al., 1989; Burgess et al., 2002; Foster et al., 2005; Hamilton et al., 2016;

Huttenlocher et al., 2010; Niklas & Schneider, 2013; White, 1982).

SES

It is widely and frequently reported that SES is strongly associated with children's academic development, including early literacy skills, and is often used as a key control variable in literacy studies (Manrique Millones et al., 2014; Radziszewska et al., 1996; Wang et al., 2017). In a meta-analysis, White (1982) reviewed 200 studies that considered this relationship. He found that when SES was typically defined as family income, parental education, and/or occupation of the head of the household, and when the individual rather than income group was used as the unit of analysis, SES had only a weak association ($r = .22$) with academic achievement for which literacy skills were an important measure. Further analyses of the 200 studies reviewed found that the strong association between SES and academic performance was only identified in certain studies that included family characteristics in the measure of SES, such as parental attitudes and aspirations, reading materials, academic guidance, or other contextual factors. This finding indicated a possible association between home literacy environment and children's literacy skills.

More recent studies report that SES can predict children's early literacy development, but that other home factors mediate the relationship between SES and children's early literacy development (Aram et al., 2013; Bradley et al., 1989; Burgess et al., 2002; Foster et al., 2005; Hamilton, et al., 2016; Huttenlocher, et al. 2010; Niklas & Schneider, 2013). For example, Bradley et al. (1989) found that some other home factors, such as parental responsiveness and availability of stimulating play materials had a much stronger predictive relationship than SES with the developmental status of one- to two-year-old children. Burgess et al. (2002) pointed out that SES might only be a marker variable of some other home factors, such as parent-child reading, the number of reading materials, or TV watching time, that impact children's early literacy directly. Foster et al. (2005) supported Burgess et al.'s supposition and found that home learning experiences, such as reading to children or play activities at home, mediated the association between SES and children's early literacy skills as measured by vocabulary, phonological awareness, and parent reports of children's development of other early literacy skills. Two recent studies on non-English-speaking children obtained the same results. In a study of Arabic-speaking children (Aram et al., 2013), researchers found that SES predicted children's alphabetic knowledge, phonological awareness, and vocabulary. However, when other home factors, including literacy resources, and parent-child reading frequency and time were entered into the model, the significant contribution of SES to those early literacy skills completely or partially diminished. Similarly, Niklas and Schneider's (2013) study showed that HLE factors fully mediated the relationships between SES and German-speaking children's vocabulary, phonological awareness, and letter

knowledge. Huttenlocher et al. (2010) reported that parents' child-directed speech mediated the relationship between SES and children's speech level at 14 to 46 months of age. As well, Hamilton et al. (2016) found that children's SES assessed at four years old predicted their reading comprehension at six years old, but that the predicted relationship can be completely explained by children's story exposure at four years old. In other words, family SES in early years affects children's late reading comprehension through their story book reading experiences. These studies and the earlier White (1982) research generally point to the important influencing and mediating role of home literacy learning factors other than SES.

In summary, studies suggest that SES significantly contributes to children's early literacy skills; however, this contribution can be completely or partially explained by other home factors, such as physical resources or shared reading frequency.

Home Literacy Resources

HLE researchers have often used the term *home literacy resources*, yet very few have defined the term clearly. Roskos and Twardosz (2004) took up this challenge and proposed that the literacy development of children depends on the interaction with outside experiences stably and regularly in an active and progressive way (e.g., parents fine-tuning their instructional speech to a level a little bit higher than children's level or providing support to facilitate children's learning during storybook reading time). Home literacy resources are the affordances of the immediate environment that make this proximal process happen. Roskos and Twardosz categorized such resources into three types: *physical resources* (space, time, and materials for literacy-related processes), *social resources* (people present in the family, the knowledge possessed by these people, and emotional relationships with these people), and *symbolic resources* (family literacy routines, literacy influences from community, society, or culture).

Commonly used indicators of home literacy resources include frequency and duration of storybook reading, frequency of library visits, and the number of picture books that children own. These indicators, measured together as a composite or individually, have frequently been found to be correlated with children's oral language ability, usually measured by receptive and expressive vocabulary (Payne et al., 1994; Sénéchal et al., 1996; Storch & Whitehurst, 2001). Moreover, the amount of reading material at home was found related to children's Grade One reading ability by some Chinese researchers (Shu et al., 2002). According to the theory of proximal process (Bronfenbrenner & Ceci, 1994; Roskos & Twardosz, 2004), literacy development is determined by the interactions between literacy resources and children. Thus, it could be suggested that the literacy interactions in which children engage mediate at least partially the

association between home literacy resources and child literacy outcomes. The results obtained by Shu et al. (2002) support this claim, showing that the amount of reading material (material resource in the physical environment) affects Mandarin-speaking children's reading ability indirectly through parent-child literacy activities. One study (Farver et al., 2013) of English-Spanish bilingual children found that three- to five-year-old children's home literacy resources predicted their print knowledge.

To summarize, not all factors of home physical environment are correlated with children's early literacy skills. The impact of SES, while positively associated with children's early literacy skills, is found to be less influential when other factors in the home are examined. Literacy resources in the home, however, are positively and significantly related to children's language development and early reading skills. The association between home literacy resources and child literacy outcomes is mediated by literacy interactions that children engaged in.

Interpersonal Interactions

One heavily researched home factor in the literature is interpersonal interactions, the literacy-related activities between the child and other people in the home. Among interpersonal interactions, the major focuses in the literature are child-directed speech, shared storybook reading, and parental teaching.

Child-Directed Speech

Numerous observational studies in the 1970s and 1980s revealed the characteristics of parental child-directed speech and its connections with children's early literacy development. First, there were socioeconomic differences in the child-directed speech among families, which may partly explain differences in children's literacy development. For example, Ninio (1980) observed the joint-book-reading experiences of 40 dyads from both lower- and middle-SES families with children aged 17 to 22 months. She found that lower-SES parents talked to their children less than higher-SES parents during reading time and that lower-SES children, correspondingly, had a smaller productive vocabulary than higher-SES children. Furthermore, the sophistication of parents' child-directed speech increased with children's age and language development and functioned as a scaffolding method in guiding children's language development (DeLoache & DeMendoza, 1987; Moerk, 1985; Pellegrini et al., 1985a, 1985b; Wheeler, 1983). For instance, Wheeler (1983) observed the child-directed speech used by the mothers of 10 children aged 17 months to five years old. She found that as their age increased, children's verbal expression in joint book reading with their mothers changed from simple labeling to meaningful two-to-three-word utterances, to complete sentences associated with things outside the picture. Accordingly, the sophistication of mothers' verbal attempts increased; the focus of "motherese" (also called baby talk, referring to the way a mother talks to their child) changed

from single elements to multiple elements, to interpretive comments about the picture book as children aged. Further, child-directed speech of a higher degree of interactivity was found more beneficial for children's early literacy development than less interactive parental utterances (Ninio & Bruner, 1978; Scherer & Olswang, 1984; Wells, 1985). Scherer and Olswang (1984) investigated the conversation of four parent-child dyads and found that when a mother added expansions to her speech, this was systematically related to an increase in their child's spontaneous imitation of vocabulary, which brought about an increase in their productive vocabulary. Although these studies showed a link between home literacy factors and children's early literacy skills, they are observational and descriptive in nature and cannot be used to prove the causal relationship between home factors and children's early literacy skills.

Recent studies revealed that child-directed speech is closely related to children's language development, especially vocabulary development (Dominey & Dodane, 2004; Huttenlocher et al., 2010; Rowe, 2008, 2012; Weizman & Snow, 2001). Rowe (2008) focused on American families from diverse SES backgrounds and found that parental child-directed speech (similar to "motherese," the way parents talk to their children) when children were 30 months of age had a unique and significant contribution to children's vocabulary one year later. Huttenlocher et al. (2010) investigated the relationship between the caregivers' child-directed speech and English-speaking young children's level of speech and the correlational results showed that child-directed speech can significantly predict children's later speech development. Further, Weizman and Snow (2001) collected 263 mother-child conversations in five different settings, including during shared reading, playtime, and mealtime from 53 low-income families. They found that the density of sophisticated vocabulary used by mothers and the density of embedding sophisticated words in instructional interactions when children were five years of age significantly predicted children's vocabulary level in kindergarten and second grade. Sophisticated vocabulary in the study was defined as the words that fell outside the 3000 most commonly used English words. Similarly, Rowe (2012) reported that, after controlling for SES, children's vocabulary ability, the input quantity of speech, parents' use of sophisticated vocabulary, and their use of decontextualized language significantly explained children's later vocabulary level. Decontextualized language (e.g., universe, monster, or Snow White) here refers to the language that is contextualized in an abstract setting or a setting geographically or chronologically distant, opposite to the language used in children's immediate environment (e.g., cup, table, mom, or water).

Parental Teaching

Parental literacy teaching is a very common literacy practice in the home. Martini and Sénéchal (2012) found that literacy teaching occurs in various

contexts, the most frequent of which are reading storybooks, talking about familiar items in the home environment, and talking about street signs. Martini and Sénéchal also identified two types of literacy teaching behaviors of parents: teaching basic literacy skills (e.g., letter names and sounds, name printing) and teaching advanced literacy skills (e.g., word reading). Certain researchers found that teaching behaviors might vary with SES and that teaching advanced skills might be more important in middle-class homes than among the general population (Sénéchal, 2006b; Sénéchal & LeFevre, 2002). However, caution is needed in interpreting their results as differences in the choice of teaching behaviors may have resulted from the different measures of parental teaching employed by the researchers. One study only employed parental reports of teaching advanced skills to measure teaching behaviors (Sénéchal & LeFevre, 2002), while the other study (Sénéchal, 2006b) assessed parental teaching of both basic and advanced literacy skills.

A number of studies (Aram et al., 2013; Dale et al., 1995; Evans et al., 2000; Hamilton et al., 2016; Martini & Sénéchal, 2012; Puglisi et al., 2017; Sénéchal, 2006a, 2006b, 2011; Sénéchal et al., 1998; Sénéchal & LeFevre, 2002; Stephenson et al., 2008) have consistently shown that parental literacy teaching behaviors correlate with young children's language development and that they can also predict print-related early literacy skills such as knowledge of letter names and sounds and early word reading. Some researchers have found that parental teaching is associated with children's reading performance in the early primary school years and that this association is mediated by print-related early literacy skills (Sénéchal, 2006b; Sénéchal & LeFevre, 2002). Similarly, Dale et al. (1995) found that parental home instruction of letter names and sounds correlated with children's letter and word recognition and passage comprehension. Another study (Evans et al., 2000) found that parent-child letter activities at home could predict children's mastery of letter names and sounds. Earlier studies (Sénéchal et al., 1998; Sénéchal & LeFevre 2002) had found that parental reports of their teaching of reading and printing words correlated with children's concepts of print, alphabet knowledge, invented spelling, and decoding. Sénéchal (2006b) found parental reports of both teaching letter knowledge and reading/printing words could predict children's alphabet knowledge in kindergarten and word-reading skills in grade one. In more recent studies, Aram et al. (2013) found that parental guidance in joint writing (i.e., parent and child writing together) significantly predicted children's alphabetic knowledge, concepts about print, and phonological awareness. As well, a study by Puglisi et al. (2017) found that parental direct letter and word instruction significantly predicted four-and-a-half-year-old children's word reading and spelling, even after controlling for their shared reading practices at home and maternal language level. Thus, parental teaching behaviors at home—whether teaching basic literacy skills or advanced reading skills—has been found to be

directly related to children's print-related early literacy skills.

With respect to phonemic awareness, Sénéchal and LeFevre (2002) found that parental teaching behaviors did not significantly predict the variance of children's phonemic awareness when controlled for children's oral language, print-related early literacy skills, and analytical intelligence. Sénéchal (2006b) obtained similar results in another study, though caution should be taken in interpreting these findings. Dale et al. (1995) pointed out that the acquisition of phonemic awareness needed explicit instruction and that even instruction on easier levels of phonological awareness such as rhyming or alliteration was insufficient. Additionally, Sénéchal's studies (Sénéchal, 2006b; Sénéchal & LeFevre, 2002;) only measured parental teaching of letter names and sounds, name printing, or word-reading skills and did not assess any of the teaching behaviors on phonemes. It could be suggested that the limited effects of parental teaching behaviors on phonemic awareness might have resulted from the fact that researchers did not include phoneme-teaching behaviors as one dimension of the measure for parental teaching behaviors. For example, Hamilton et al. (2016) reported that parental literacy-focused teaching of four-year-old children—measured using the same instrument as Sénéchal and LeFevre (2002)—predicted children's phoneme awareness and emergent decoding at six years of age. One explanation for the differing results might be that the parental literacy-focused teaching Hamilton et al. measured, which accurately reflected the parental instructional level of phonemes—how often parents taught their children phonemes.

In summary, parental teaching behaviors at home are related directly to children's print-related early literacy skills, indirectly to their literacy skills in their early primary school years, but not related to children's language development. No predictive relationship between parental teaching and children's phonemic awareness has been found, but this might be because teaching phonemes was not included as a dimension of the measure for parent-teaching behaviors. The relations between parental teaching and children's phonemic awareness needs more exploration in the future.

Shared Storybook Reading

Shared storybook reading refers to an early childhood practice in which an adult reads a book to their child or children (Harris & Hodges, 1995; Pollard-Durodola et al., 2011; What Works Clearinghouse, 2006). In home settings, the adult could be a parent or another caregiver like an elder sibling or grandparent. Numerous studies have found that parent-child storybook reading has both correlational and causal relationships with children's oral language, which is usually measured by vocabulary (Bus et al., 1995; Hargrave & Sénéchal, 2000; Payne et al., 1994; Sénéchal, 2006a, 2006b; Sénéchal & Cornell, 1993; Sénéchal et al., 1996; Sénéchal et al., 2017). For example, Sénéchal et al. (1996) found that

the storybook-reading experience of preschool and kindergarten children was related to their vocabulary scores. Sénéchal and Cornell (1993) found that children could acquire vocabulary from just one exposure to storybook reading. In their study, 10 target words were introduced to children through a shared reading activity. The researchers administered pretests and posttests to 160 four- and five-year-old children to assess their vocabulary knowledge before and after the reading. The results showed that children acquired new words receptively (i.e., understanding the word by listening) after one exposure to storybook reading. Whitehurst et al. (1988) developed *dialogic reading* (DR), an interactive form of storybook reading, and found that this reading technique could promote children's receptive and expressive vocabulary. The results from numerous studies are also consistent with Whitehurst's finding (Crain-Thoreson & Dale, 1999; Cronan et al., 1996; Fielding-Barnsley & Purdie, 2003; Huebner, 2000; Lonigan et al., 2013; Lonigan et al., 2008; Niklas & Schneider, 2015; Rahn et al., 2016; Strouse et al., 2013; Towson et al., 2017; Towson & Gallagher, 2014). In one study, Lonigan and his colleagues (2013) researched 324 preschool children and found that DR effectively improved children's expressive vocabulary, the use of modifiers and attributes, and the total score of these literacy skills. Strouse et al. (2013) suggested that adding some DR elements to shared picture book reading can significantly and positively improve children's vocabulary development. Mol et al. (2008) conducted a meta-analysis comparing DR and conventional storybook reading and found that dialogic reading provided an added value in promoting children's expressive vocabulary. Sénéchal (2006b) also found that parent-child reading has longitudinal effects on children's grade four reading development via language development and interest in reading.

Why might parent-child reading facilitate children's vocabulary development? Sénéchal and her colleagues (Sénéchal, 2011; Sénéchal et al., 1996; Sénéchal et al., 2017) proposed three possible reasons. First, the language in storybooks is more complex than that used in daily life. Second, parents pay more attention to their children and provide more informative and instructional interactions, which are valuable to children's language and vocabulary development. Third, storybook reading provides repeated exposure to vocabulary—children learn a new set of words and then repetition of the story helps their retention of the words, which has been found to be a very effective method to develop vocabulary (Leung, 1992; Sénéchal, 1997). Other features of storybook reading might also be beneficial to learning vocabulary. Parents can provide explicit teaching of vocabulary and children can also acquire vocabulary implicitly from the story; both ways are meaningful for vocabulary learning (National Institute of Child Health and Human Development, 2000). In addition, stories provide rich contextual information for children to understand vocabulary in a profound way. Researchers have shown that redundant information (in the context) is very important for vocabulary learning

(Kameenui et al., 1982). In all, shared storybook reading provides a rich context and opportunity for children to learn vocabulary and language.

With regards to children's print-related early literacy skills, the literature shows mixed results. In some studies, storybook reading has been found not to be related to children's print-related early literacy skills (Evans et al., 2000; Sénéchal, 2006a, 2006b, 2011; Sénéchal & LeFevre, 2002; Sénéchal & Young, 2008; Storch & Whitehurst, 2001). Other studies, however, obtained opposite results. Bus et al. (1995) conducted a meta-analysis of empirical evidence on parent-child storybook reading and children's literacy outcomes. The authors found that parent-preschooler storybook-reading interventions contribute to the variance in children's ability in name reading/writing and letter naming. Mol et al. (2009) also found that classroom dialogic reading could promote children's alphabet knowledge and orthographic awareness—knowledge about how letters form words or letter patterns in a word.

One possible explanation for the different results obtained by Bus et al. (1995) and Mol et al. (2009) is that the parents involved in their studies exhibited print-directed behaviors during the reading process. However, parents participating in those studies that found no significant relationship between shared reading and print-related skills rarely displayed print-directed behaviors (Ezell & Justice, 2000; Justice & Ezell, 2000). The findings in those studies suggested that children usually did not attend to and acquire knowledge of print unless parents directed their attention to it. Justice and her colleagues (Ezell & Justice, 2000; Justice & Ezell, 2000) developed *print-referencing shared reading* (PRSR), in which parents were encouraged to use verbal (e.g., questions, requests, and comments) or nonverbal strategies (e.g., pointing to or tracking the print) to interact with their children about print. The results of their studies found that PRSR significantly improved the children's verbal references to print (Ezell & Justice, 2000), and children's early literacy skills about print and word awareness (Justice & Ezell, 2000). Martini and Sénéchal (2012) found that parental teaching was related to children's letter recognition and simple word reading. They also found that shared storybook reading was a frequently used context for parents to tutor their children in literacy skills. Thus, the possibility exists that parental teaching of print knowledge—or their print-referencing behaviors—during storybook reading led to the significant association between parent-child reading and print-related early literacy skills in the studies of Bus et al. and Mol et al..

One recent study (Puglisi et al., 2017) investigated the relationship between home literacy factors—measured by shared reading and parental instructions—and the language and early reading development of children up to four-and-a-half-years old. They found that shared reading at home significantly and positively predicted children's language level, which was measured by vocabulary, sentence structure,

and sentence repetition. However, after controlling for maternal language level, this significance diminished. They explained that the relationship between shared reading and children's language might be a reflection of the genetic influences from their mothers on their child. That is, language ability can be passed on from parents to children through heredity, which is one possibility. However, another more likely explanation is that the quality of child-directed speech used in the shared reading or in daily life, which is largely determined by the level of maternal language, accounted for the variations in children's language development.

With respect to children's phonemic awareness, some studies such as that of Sénéchal and LeFevre (2002) have found that parent-child reading is not related to children's phonemic awareness—the ability to be aware and manipulate phonemes (the smallest unit of sound). This might be explained when considering that the acquisition of phonemic awareness necessitates explicit exposure to phonemes (Dale et al., 1995). However, Bus et al. (1995) found in their meta-analysis that parent-child reading could contribute to the variance in phoneme blending tasks. These inconsistent findings might have occurred because the researchers employed different measures. The studies analyzed by Bus et al. (1995) usually defined parent-child reading operationally as parent-reported reading frequency or a combination of reading frequency and reading quality indicators. However, the studies of Sénéchal and her colleagues (Sénéchal & LeFevre, 2002) used checklists of book titles or author names to measure parent reading practices.

In sum, parent-child reading can promote children's language, especially vocabulary development, by providing a rich language-learning context. Conventional parent-child reading might have little effect on children's print-related early literacy development and phonemic awareness because of the lack of explicit instruction on phonemes and the lack of attention to print.

Overlapping of Interpersonal Interaction Practices

There is no clear boundary among the common practices of interpersonal interactions (Puglisi et al., 2017). To date, the research on parental teaching indicated only that the already existing parental instructions at home have positive effects on children's early literacy skills, but the result is not intended to be prescriptive (Sénéchal et al., 2017). Whether parents should teach at home is still debatable and in need of further investigation and discussion. Child-directed speech can be one element of shared reading, and the quality of child-directed speech in shared reading influences the reading quality and effectiveness. As well, shared reading can also be a context for parental teaching. The PRSR reading approach (Ezell & Justice, 2000; Justice & Ezell, 2000), to some extent, is a combination of print instruction and shared reading. Further, once children acquire the alphabetic principle, they can learn alphabetic knowledge using a picture book reading process (Puglisi et al., 2017). Thus, when researchers examine the effects of the three interpersonal interaction practices, the overlap among them should be

considered.

Emotional and Motivational Environment

Emotional and motivational environment refers to the relationships between family members and aspects of a person's inner world, such as beliefs, expectations, aspirations, or recollections of past experiences (Leichter, 1984; Roskos & Twardosz, 2004). In this paper, three aspects that have received special attention from researchers will be reviewed: parental literacy beliefs, parental literacy expectations, and child interest in literacy.

Parental Literacy Beliefs

Generally speaking, in the literature this term refers to parents' perspectives about literacy and how to learn literacy. There are differences in literacy beliefs among parents. Some parents hold that it is valuable to teach children basic literacy skills such as letter names and sounds (Serpell et al., 2005), while others believe that reading is a top-down process—that a child needs to focus on the meaning of the text and learn basic skills in the reading process (Lynch et al., 2006). Other parents hold an interactive view of learning to read—arguing that both basic skills learning and whole-text reading are necessary (Sonnenschein et al., 1997). In addition to their perspectives on how reading development is achieved, parents can have different beliefs on the extent to which school or parents should be responsible for children's literacy (Fitzgerald et al., 1991). Thus, the extent to which parents assume a role as a teacher and act upon it can vary (Hoover-Dempsey et al., 2005).

Numerous researchers (Baker & Scher, 2002; DeBaryshe, 1995; DeBaryshe et al., 2000; Lynch, 2002; Lynch et al., 2006; Machida et al., 2002; Weigel et al., 2006) have found that parental literacy beliefs are associated with parent-child interactions, children's early literacy skills, and children's interest in reading. Moreover, some studies (DeBaryshe, 1995; Lynch et al., 2006) have found that parental beliefs can influence children's early literacy skills through literacy interactions in which children are engaged. Other studies (Bingham, 2007; Lynch et al., 2006) have suggested that research into parental literacy beliefs should be domain-specific (i.e., different parental literacy beliefs might have different effects on home literacy interactions and children's early literacy skills). The match between literacy beliefs and interactions examined by researchers might influence intervention effects. Further, the discrepancy between researchers' intervention requirements and literacy beliefs held by participants might lead to implementation issues (Janes & Kermani, 2001). That is, the literacy beliefs measured should correspond with the target literacy outcomes in research (e.g., beliefs in the importance of learning new words in daily life corresponding with children's

vocabulary level); otherwise, it might lead to low efficacy of the intervention program.

To summarize, parental literacy beliefs appear to be related to children's early literacy skills and literacy interactions, and the association between parental beliefs and children's early literacy skills may be mediated by home literacy interactions. In researching the effects of literacy beliefs on children's literacy outcomes, the types of parental beliefs and their match with child outcomes should be taken into consideration.

Parental Literacy Expectation

Before discussing expectations, it is necessary to distinguish expectations from beliefs: belief is defined as the acceptance of a statement as truth, while expectation refers to the state of looking forward to something (Merriam-Webster, 2004). Thus, parental literacy expectations are literacy events that parents are looking forward to, a meaning also implied in HLE literature (Martini & Sénéchal, 2012; Sénéchal, 2011; Storch & Whitehurst, 2001). Several researchers (Hess, 1982; Storch & Whitehurst, 2001) have found that parental literacy expectations are directly related to children's knowledge of letter names and sounds or to reading skills in the early primary-school years. Moreover, Martini and Sénéchal (2012) found that parental literacy expectations are directly related to children's knowledge of letter names, sounds, and even early word reading after controlling parental teaching, SES, and children's analytical intelligence. They also found that parental expectations may be related indirectly to children's print-related early literacy skills via parental teaching of basic and advanced literacy skills. Thus, it may be deduced that parental expectations are either directly or indirectly related to children's early literacy via home literacy interactions. Storch and Whitehurst (2001) found that parental expectations of their child's grades in reading and spelling were related to their children's performance on measures of word reading and spelling in grade one. The degree of the match between parental expectations and child outcomes might contribute to the significance of this association. However, Stephenson et al. (2008) combined parental literacy beliefs and expectations into one measure and found that parental expectations of their child's future reading performance was not related to the child's actual outcomes. The reason for this may be that the measure of expectations in the study was so unspecified that the association between parental responses to this question and the child's current and longitudinal outcomes was too weak to be detected. Thus, as suggested for parental beliefs, the types of parental expectations should be examined further in future research.

Child Interest in Literacy

This term refers to children's inclination for engaging with literacy materials and activities, which is often operationally defined as parental reports of children's

interest—including indicators such as parents' feelings about their children's interest, children's requests for literacy activities, and the frequency of children's reading-alone behaviors (Sénéchal et al., 1996) and children's reports of their feelings about literacy activities (Frijters et al., 2000).

From prior research, it could be suggested that children's interest in reading and writing contributes to variance in children's early literacy skills. Martini and Sénéchal (2012) found that child interest in reading, measured by a pictorial scale invented by Frijters et al. (2000), was related to children's knowledge of letter names, sounds, and early word reading, even when parental teaching behaviors and expectations, SES, and children's analytical intelligence were controlled. This result is consistent with research that has shown that child interest in literacy measured by the same pictorial scale is a unique predictor of children's knowledge of letter names and sounds even when parental teaching is considered (Frijters et al., 2000; Frijters et al., 2001). Sénéchal et al. (1996) conducted two studies for which children's interest in storybook reading was a variable. In the first study, the researchers found a positive association between children's interest in book reading and their receptive vocabulary; however, these results were not replicated in the second study. One explanation might be that the validity of parents' self-reports of child interest was undermined by social desirability bias. It should be noted that the type of child interest measured in the research usually corresponded to the child literacy outcomes they examined. Sénéchal et al., for example, measured children's interest in storybook reading and their vocabulary development as the literacy outcome, while Frijters et al. (2000, 2001) measured children's interest in print-related activities and their alphabetic knowledge as the literacy outcome. Thus, researchers doing research in child interest in literacy need to consider the type of literacy interest and its relationships with targeted literacy outcome.

Challenges and Issues

Researching the home literacy environment is complex. Three issues, in particular, present challenges—intervention fidelity, validity of measures of HLE, and sensitivity to privacy in home settings. Although these three problems are not exclusive to HLE studies, they are exacerbated when the research settings are families or homes.

Intervention fidelity refers to the degree to which the intervention is implemented as researchers intended (Blom-Hoffman et al., 2007; Powell & Carey, 2012). Powell and Carey (2012) pointed out that the small effects or the absence of effects showed in many studies of family literacy programs might indicate a low level of program fidelity. That is, poor program fidelity might reduce the effects of the program and increase the risk of type II errors—when the null hypothesis is

accepted falsely. Such an error might lead researchers or practitioners to abandon programs that might, in fact, hold potential for positive effects on children's literacy development. Further, some reciprocal influences between parents and children—in the interaction between parents and children, their actions or responses can influence each other—might distort the enactment of a home intervention program and decrease the degree of fidelity. For example, in some shared interactive reading interventions, parents could not apply recommended interactive techniques during the reading process as planned. In cases where children only wanted to listen to the story, parents' opportunity to follow the planned activities were curbed by their need to be responsive to their children. Because of such factors, the implementation of some HLE programs have been hindered by fidelity problems.

Two major issues threaten the *validity of measures* of the HLE. The first threat is social desirability bias, which means that participants prefer to answer questions in a socially accepted way rather than with the truth (Bugental et al., 1998). Many measures of the HLE are self-report questionnaires, such as the Stony Brook Family Reading Survey (Whitehurst, 1992) or the Language Reading and Family Survey (Whitehurst et al., 1988). The validity of self-report questionnaires can heavily depend on the quality of participants' responses, yet studies have found that parent responses may be affected by social desirability bias (Holden, 2001; Krevans & Gibbs, 1996; Locke & Prinz, 2002). To clarify, the questions in HLE surveys are usually about family resources, literacy-related routines at home, parents' beliefs and expectations about literacy, or parents' perceptions of their children's reading interest and literacy behaviors. These types of questions are usually personal, and participants might give answers favoring themselves, which increases the risk of social desirability. As well, the book title/author name checklists—a research instrument used by many HLE researchers to evaluate one's knowledge of books/authors as a proxy measure of their home reading environment—is widely reported as vulnerable to social desirability (Hamilton et al., 2016).

The second threat to measure validity stems from the reliability of the checklist measures, such as the ones developed and used by Sénéchal et al. (1996), including the *Children Title Checklist*, the *Children's Author Checklist*, and the *Adults' Author Checklist*. The titles in the first checklist, *Children Title Checklist*, were obtained from a survey the Sénéchal (1988) study did on two bookstores, in which they asked 150 parents to list their children's favorite book and bestseller book lists. The author names in the *Children's Author Checklist* were from books in the first checklist. The third checklist, *Adults' Author Checklist*, was partially adapted from Stanovich and Cunningham (1992), with some authors replaced with Canadian authors. All three checklists contain plausible foils to test if parents can discriminate the real titles/author names from the false ones, which is expected to

reduce biased reporting. These checklists have been popular tools, used by many researchers because of their value to advancement of the research. The rationale for these checklists is that there is a common body of knowledge of children's and adults' literature and, therefore, the amount of such knowledge a person has represents their exposure to print. However, this knowledge may vary according to many factors, such as a person's cultural and linguistic background, as people from different backgrounds have different reading experiences (Adams, 1994; Wang et al., 2002). Also, as the time goes by, books favored and read by children and parents change. Moving forward, researchers need to revise and update the checklists to optimally use them in their research; otherwise, the checklists may not reflect current common knowledge of book titles and author names. When the existence of the common knowledge is in doubt, the validity of such checklists may be uncertain.

Privacy and sensitivity of home settings can be a barrier to researching HLE and a threat to research validity. Home privacy can be an issue because the identities of family members are intertwined (Lefley, 2000; Margolin et al., 2005; Moon et al., 1991). One person's answer to a self-report question might involve information about other family members (Chow & McBride-Chang, 2003). Furthermore, to some extent, the home setting is typically a private place that family members may not want strangers to intrude upon. However, for some observational studies (Ninio, 1980, 1983; Snow, 1983), significant exposure of the home setting would be unavoidable. Under the pressure of invasion of their privacy, parents may be reluctant or may refuse to cooperate with researchers. Such pressure may exacerbate the risk of parents providing inaccurate information in an aim to placate researchers, thus hindering research quality and threatening its validity (Margolin et al., 2005).

Limitations and Future Directions

This paper has examined literature on the relationship between HLE and children's early literacy skills, reviewing what is known to date and identifying areas that need to be examined in the future. The remainder of this section identifies and discusses goals for future research to deepen knowledge in the field of HLE research.

First, it is necessary to deepen and widen knowledge of home literacy resources. Roskos and Twardosz (2004) focused on the heavily researched topic of parent-child reading and aimed to identify the role of different home literacy resources in this process. They found that only limited data about home literacy resources could be obtained from the studies they reviewed, and even less about the relationships between family resources and the proximal processes of storybook reading. Thus, more descriptive studies are needed to extend the

literature on family resources and their role in promoting or hindering proximal processes. Further, more research attention should be directed to certain social resources such as parental beliefs, parental expectations, and children's interests to replicate existing studies or generate new knowledge.

Second, another future goal could be to conduct more experimental and longitudinal research on the HLE (Aram et al., 2013; Puglisi et al., 2017; Sénéchal et al., 2017). Numerous studies have examined the causal role of HLE in promoting children's early literacy development (Huebner, 2000; Justice & Ezell, 2000; Whitehurst et al., 1988); however, in the last three decades, the commonly used methodology has been correlational in design, which has limitations such as the inability to demonstrate causation (Aram et al., 2013; Puglisi et al., 2017). In addition, the majority of those correlational studies have a concurrent nature, which means that the direction of the predictive relations cannot be determined (Sénéchal et al., 2017). Thus, in the future, researchers could employ more diverse methodologies, especially experimental and longitudinal designs, to extend the boundaries of HLE knowledge.

Third, it must be more widely recognized that other members of a family—not just parents—may influence a child's literacy development. Although the role of parents in facilitating children's literacy development has been well documented in the literature, the effects of siblings and caregivers, including grandparents, are under researched (Gregory, 1998, 2001). Some studies have already shown that interactions with siblings and grandparents can have a positive effect on children's literacy learning (Gregory, 1998, 2001; Kelly, 2004; Olmedo, 2004; Volk & Acosta, 2004). Farver et al. (2013), for example, investigated the relationships between HLE factors and three- to five-year-old bilingual children's early literacy skills and found that the variations in sibling-child reading behaviors at home predicted children's English oral language competence. In another example, Volk and Acosta (2004) found that many family literacy events happen in the communal space of the family, such as family Bible reading, and involved all the children and their parents. Sometimes siblings can take the role of a teacher and provide assistance to younger children in the family. Gregory (1998, 2001) revealed that the assistance can be scaffolding. That is, the assistance of the siblings was fine-tuned to the developmental level of the younger child. Another instance from Olmedo (2004) showed that children's literacy skills can be enhanced by communication with elders in the community, including their grandparents. However, these studies are all descriptive in nature and have a focus on school-aged children instead of preschool and kindergarten children. In the future, the role played by siblings and grandparents in young children's literacy development can be a meaningful research goal, and more diverse methodologies can be applied to examine this topic.

Fourth, there are many studies on the personal interaction aspect of HLE, but

the other two aspects—physical environment and emotional/motivational environment—are relatively under researched. For SES or socioeconomic status in the scope of physical environment, Sénéchal et al. (2017) posited that the most important research direction in the future is not the comparison between socioeconomic strata—whether children from one SES group outperformed their peers from the other SES group in literacy—but the explanatory power of SES in the variations of children’s literacy skills. For instance, how much do the variances in SES explain the differences in children’s literacy development? In terms of emotional/motivational environment, there are fewer studies on this aspect than on the other two dimensions of HLE. The HLE measure in many studies included only home literacy resources and personal interaction factors such as shared reading and parental literacy-teaching behaviors (Aram et al., 2013; Farver et al., 2013; Hamilton et al., 2016). More efforts are needed to investigate the relationship between factors of this aspect—parental literacy beliefs and expectations and children’s literacy interest—and children’s early literacy skills. In addition, researchers should pursue several other goals, including investigating the relationship between parental activities arising from daily life that support phonological awareness and children’s phonemic awareness development; better knowledge of this aspect of literacy development will enhance current HLE models. Another area ripe for study is the dimensionality of child interest and how it may impact their domain-specific learning. Even in well-researched areas such as shared reading, the research can go beyond the relationship between shared reading and children’s literacy skills and explore how shared reading influences other aspects of children’s reading behavior such as their motivation to read for pleasure (Sénéchal et al., 2017).

Other possible future research directions could include consideration of how to overcome the barriers of privacy and fidelity, and the development of HLE assessment instruments with high validity. Moreover, HLE research on typically developing children has been well documented while there has been little focus on children at risk (Hamilton et al., 2016). Justice and her colleagues (Justice et al., 2015; Justice et al., 2011) have explored this area with a focus on children with language impairments. Future research can extend participants to children who may be at risk for reading difficulty due to a wide range of cognitive, behavioral, or sensory challenges. In addition, many HLE studies focus on English-speaking children, and future research should involve more children from bilingual families or non-English-speaking groups.

Conclusion

The HLE is comprised of the physical, interpersonal, and emotional and motivational factors of the home that are related to literacy development. There are

different conceptualizations of the HLE in the literature, and most researchers agree that home factors have an association with children's early literacy skills. Socioeconomic status, conventionally defined without the inclusion of family literacy factors, was found to be a significant predictor of children's early literacy skills; however, the predictive relationship is fully or partially mediated by HLE factors. Similarly, many literacy resources in the home, such as library visits and the frequency and duration of storybook reading, are related to children's early literacy development, and literacy interactions that children engage in might mediate this association.

Three interpersonal interactions have been extensively researched—child-directed speech, storybook reading, and parental teaching. Parent-child storybook reading has a correlational and causal association with children's language development. Increasing the interactive level of the reading process has an added value in promoting children's vocabulary development. It seems that children do not spontaneously focus on print unless their attention is directed to it. Using a print-referencing reading style during storybook reading can efficiently promote children's learning of print concepts. This, however, is less effective in improving alphabet knowledge such as letter names and sounds, possibly because the acquisition of print knowledge needs more explicit instruction. That is also why explicit literacy teaching by parents is strongly related to children's print-related skills, such as knowledge of letter names and sounds, and early word-reading skills. Neither storybook reading nor parental teaching seems to have a predictive relation with phonemic awareness. Yet, this conclusion may stem from the fact that both storybook reading and parental teaching behaviors examined in the studies did not include explicit phoneme-level instruction. Only a small number of studies exist on parental literacy beliefs and expectations and on child interest in literacy. These studies report that emotional or motivational aspects of the HLE are directly or indirectly related to children's early literacy skills. The domain specificity of these aspects of the HLE need more attention from researchers. Finally, HLE research has long been impacted by intervention fidelity, threats to the validity of HLE measures, and parental concerns about privacy and confidentiality in family settings, and researchers should continue to consider them as they work to advance this field.

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