The influence of home literacy environment on children's literacy and language development: A systematic review

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Abstract: Children's literacy and language development has been found to share an intimate link with their home literacy environment (HLE) by many researchers. However, as HLE is not a unitary construct and children's literacy and language development also includes multifaceted sets of skills, most existing studies focus on one or only a few aspects of HLE and literacy and language skills. Therefore, listerature in this area lacks a coherent approach and theoretical integration. One potential problem is that, while some aspects of HLE and their associations with language and literacy skills are frequently studied, some other aspects tend to be ignored. This systematic review selects 15 related empirical studies through rigorous screening and examines the variables used to measure HLE along with the correlations between different aspects of HLE and specific domains of children's literacy and language development across studies. The results indicate that parent-child activities (not direct teaching behaviours) are the most frequently discussed aspect of HLE while child-led literacy activity is one of the least measured items. Regarding the correlation between HLE and literary and language development, oral language skills, such as receptive vocabulary and expressive vocabulary, are more related to parental demographics and attitudes towards reading and informal literacy activities. Meanwhile, decoding skills, such as letter knowledge and phonological development, are more linked with parental direct teaching behaviours. Based on the findings, implications for future HLE research are discussed.

Keywords: home literacy environment (HLE), parental demographical characteristics, parental literacy beliefs and attitudes, parent-child literacy activities, passive HLE, literacy and language development

1. Introduction

This study explores the contribution that the home literacy makes in relation to children's literacy and language development on the basis of existing relevant studies. Having searched through relevant literature on this and related topics, it emerged many studies have examined the relationship between home language use and children's literacy and language development, with the different aspects of these being relevant to home language use, such as parental educational level, parental income, parental literacy and language beliefs, parental literacy habits, and parent-child language activities. These activities fall to be regarded as being relevant to the broader category of home literacy environment (HLE). Furthermore, as a result of the fact that literacy and language skills are also multifaceted sets of skills, a trend has emerged within this field of study involving the exploration of the influence of different aspects of HLE exerted on different literacy and language outcomes.

2. Children's literacy and language development

The importance of language skills and literacy skills for children's acquisition of literacy and more general development has been acknowledged by numerous studies (Kim, 2007). However, in such studies, the terms literacy and language are often both used, without a clear boundary being drawn between these two terms. To establish the reason why such researchers consider the two terms as a whole, it is important to understand how the two terms are defined.

First, children's language development is a process by which children come to understand and produce language, which can be broken down into several components, including pragmatics, phonology, lexicon, and grammar (Pashler, 2013). According to Pashler (2013), pragmatic development

involves the ability to use language to serve different communicative intents and functions, with this development usually being measured in terms of the extent of the communicative intents that children present in studies (ibid.). When children increase their abilities to use language productively, they also increase their communicative purposes as they relate to and involve language. The process of phonological development refers to the increases in children's ability to detect the difference in linguistic sounds and also to the production of sounds, which process constitutes an important precursor for learning to read. Lexical development mainly focuses on children's acquisition of vocabulary. When the size of a child's vocabulary increases during early childhood, their understanding of specific words as well as their meanings and how they are used also becomes deeper. Finally, grammatical development includes knowledge pertaining to morphology and syntax. More specifically, grammatical knowledge within language consists of the rules for combining morphemes into words (including compounding, derivation, and inflection), as well as, at the higher level, the rules allowing words to be combined into sentences (Brandone, Salkind, Golinkoff, & Hirish- Pasek, 2006; Pashler; 2013).

In relation to children's literacy development, researchers tend to consider two phases: emergent literacy and conventional literacy (Teale, 1995). Conventional literacy is what most people think of as "real" reading and writing, involving abilities like decoding, oral reading fluency, reading comprehension, spelling and writing (NELP, 2009). In this phase, children are able to decode at least 90% of the words they encounter within the context of a book they have never seen before, or compose a coherent message that adults can read and understand. However, some scholars doubt that the concept of conventional literacy cannot cover children's literacy learning process in preschool period and that in natural social interactions (Whitehurst & Lonigan, 1998). As Sulzby and Teale (1991) state, learning literacy skills does not need to wait until children are a certain age, or have understood some formal literacy instructions. The term emergent literacy was therefore put forward as the precursor to conventional literacy, with this concept emphasising literacy-related behaviours in the preschool period as an important aspect of literacy, and assuming that children's reading and writing abilities also develop as a result of exposure to interactions in social contexts, leaving aside receiving formal reading instructions at school. As the precursor of conventional literacy, the stage of emergent literacy involves the knowledge that can prepare children such that they can perform better in relation to their conventional reading and writing activities, mainly including two major units. The first is the outside-in unit, which represents children's understanding of the way the reading or writing materials are constructed (comprising syntactic and semantic knowledge, print format knowledge, understanding narratives or stories, signs, and labels). The second is the inside-out unit, which represents the knowledge relating to the decoding of letters in reading materials such that they correspond with sounds or sounds formatted within print for writing (comprising letter-name knowledge, letter-sound knowledge, phonetic spelling and phonological development).

Having regard to the above definitions of language and literacy development, several aspects of children's language skills can be conceived as indeed overlapping with partial components of literacy development. Firstly, phonological skill is an important component no matter whether in relation to children's literacy development or language development. In addition, the grammatical development mentioned as an important part of children's language development also overlaps with the syntactic and semantic knowledge that relates to and is involved in children's emergent literacy. Therefore, an explanation as to why the two terms are often used as a whole in many studies can be formulated in terms of the difficulty associated with isolating language development with literacy development. This is the reason why literacy development and language development are both used within the context of this systematic review.

3. Home literacy environment (HLE)

In the early conceptualisations of HLE, the relevant studies mainly focused on the social status and economic situations of families, regarding these as major predictive factors in children's academic, social, and emotional outcomes. From these early studies, researchers found that children from communities associated with higher socioeconomic status and mainstream culture tended to demonstrate higher levels of interest in literacy and perform better on school reading tests (Teale, 1986). However, as socioeconomic status comprises and is informed by a significant number of diverse activities, attitudes and opportunities, some researchers expressed doubt that equating HLE with socioeconomic factors could make it difficult for researchers to explore how HLE influences children's educational outcomes in detail, and what reasonable concrete suggestions and approaches could be made to improve HLE (Share, Jorm, Maclean, & Matthews, 1984; Walberg & Tsai, 1985). In other

words, they argue that some specific aspects of HLE could more directly and adequately explain the relationship between HLE and educational or developmental outcomes, with such an approach being superior to one only considering socioeconomic measures. Therefore, based on SES factors, some specific aspects of HLE were put forward by researchers. For instance, Heath (1986) proposed two aspects in relation to HLE: the opportunities for participating in literacy practices and parents' use of literacy, both of which are influenced by parental socioeconomic status. In 1995, DeBaryshe proposed a model that clarifies four key components of HLE: parental demographics, parental literacy habits, parental reading beliefs, and parent-child activities. In 2002, Burgess and his colleagues extended this model to a more comprehensive one, covering six conceptualisations of HLE: limiting environment (parents' literacy abilities and disposition to provide literacy opportunities), literacy interface (parents' attitudes towards literacy and participation in children's literacy activities), passive HLE (parents' practices that expose their children to literacy through modelling activities while not explicitly teaching a skill), active HLE (parents' practices designed to foster children's and language skills), and shared reading and overall HLE (all of the aspects of the HLE). To sum up, these specific HLE aspects which explain HLE from more diverse and detailed perspectives provide a reference for the following studies on this topic and related topics.

4. The research aim and research questions

The analysis process is divided into two phases, each phase corresponding with distinct research questions. In Phase 1, collecting and integrating different conceptualisations of HLE used by researchers, on the one hand, is used to provide a classification that can subsequently be applied in Phase 2. On the other hand, this process can also assist with identifying potential bias in this field. As noted above, while some aspects of HLE were frequently mentioned in the previous research, some others were left out. Through a systematic review of existing studies, it is possible to establish the weight given to different components of HLE by researchers. Then, in Phase 2, through synthesising the data from selected research, it is made possible to present in a clear manner how different components of HLE are associated with specific domains of children's literacy and language development. This will enable educators and parents to adopt corresponding approaches to improving home literacy environment, targeting particular literacy or language skills.

The research questions addressed in the current review are the following:

(1) How is the home literacy environment (HLE) conceptualised across different research studies?

(2) How are different aspects of HLE associated with specific domains of children's literacy and language development?

5. Study design

5.1 Search strategy and search terms

In order to enable enough papers to be found that explore the relationship between the home literacy environment (HLE) and children's literacy and language development, this systematic search was conducted on the following electronic databases related to the education field: Academic Search Complete, British Education Index (BEI), Education Source and Education Resource Information Centre (ERIC) via Ebscohost.

As this systematic review is conducted to find the inherent relationships holding between different conceptualisations of HLE and different domains of literacy and language development, the keywords used to search the relevant papers not only included the two general terms home literacy environment (HLE) and literacy and language development, but also the different specific terms referring to the classifications in the literature review. All the keywords applied to search in databases are presented in the following complete form (Table 1).

Table 1: Keywords used in database search.

Two general keywords	Detailed classification		Keywords used to search
Home literacy environment (HLE)	Abstract family environmental factors		parental demographics; parental reading beliefs; parental reading attitudes; parents' literacy habits; parents' literacy abilities and disposition
	Concrete parent-child literacy activities		parent-child literacy activities; implicit parents' practices (passive HLE); explicit parents' practices (active HLE); shared book-reading
Children's literacy and language development	Literacy skills	Conventional literacy skills	conventional literacy skills; decoding; oral reading fluency; reading comprehension; spelling; writing
		Emergent literacy skills	emergent literacy skills; syntactic knowledge; semantic knowledge; grammatical development; print format knowledge; understanding narrative; understanding labels and signs; letter-identification; phonological awareness; letter-sound knowledge
	Language abilities		language development (abilities); pragmatic development; phonological development; lexical development

5.2 The screening process

The screening process of the systematic review adheres to the recommendations associated with the Preferred Reporting Items For systematic review and Meta-Analysis (PRISMA), which involves the following stages:

(1)Checking and removing duplicates;

(2)Making reference to the title and abstract, removing non-empirical papers and those that only focus on one side of the home literacy environment (HLE) and children's literacy and language development instead of exploring the relationship between the two;

(3)Examining the full texts to filter out studies not conducted in English-speaking countries, those taking one side of parents as representing parental influence as a whole, and those focusing on children facing language-learning obstacles;

(4)Filtering out studies not focusing on the specific domains of literacy and language development.As shown in Figure 1
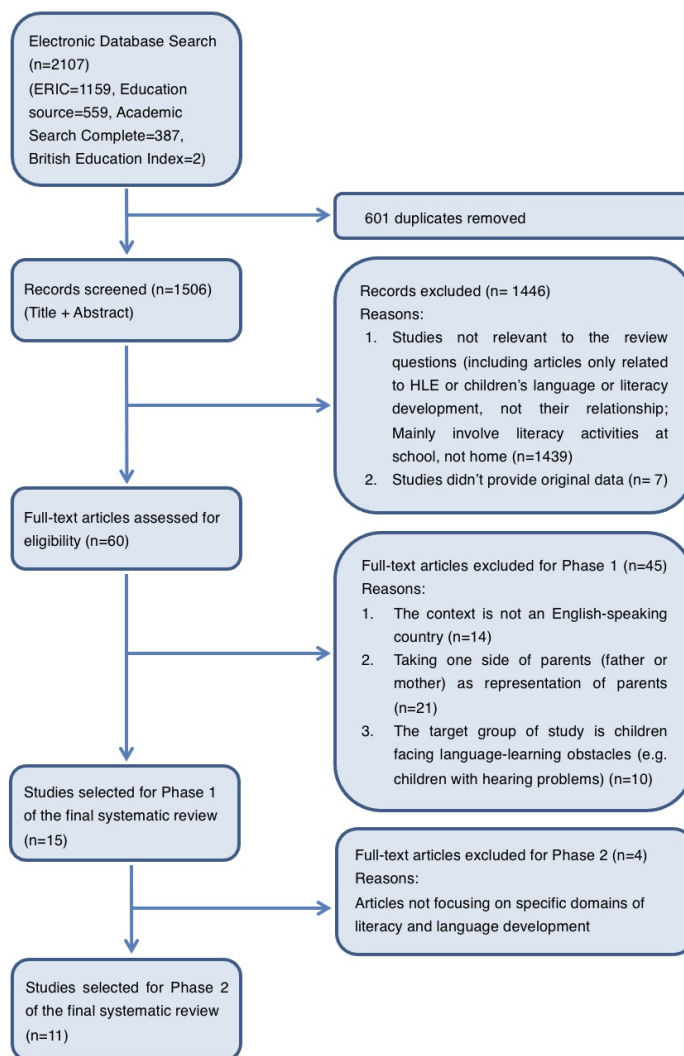
Figure 1: PRISMA flow chart of events (Liberati et al., 2009).

6. Results

In the 11 full-text articles included in Phase 2, six sets of associations were found between parental demographic characteristics and children's language and literacy development. Among the six sets of relations, children's receptive vocabulary, expressive vocabulary, phonological development and syntactic skills were found to be closely related to parental demographics, whereas children's letter-name and letter-sound knowledge appear to be only weakly influenced by this aspect of HLE (Carroll et al., 2019; Weigel et al., 2006).

As to the attitudinal aspects of HLE, it is found that there are five sets of relationships between this aspect of HLE and children's literacy and language development. While children's receptive vocabulary, phonological awareness and syntactic skills are strongly associated with parental literacy attitudes and beliefs, the letter-name and letter-sound knowledge appear not to be significantly related to the attitudinal aspects of HLE (Stephenson et al., 2008; Weigel et al; 2006).

Then, among the different kinds of literacy activities, the parents' own literacy activities (Passive HLE) and child-led literacy-related activities are found to have fewer associations with children's literacy and language development in comparison with parent-child activities. Only two sets of relationship have been investigated between the two aspects of HLE and children's literacy and language development respectively. For Passive HLE, this aspect of HLE is closely associated with children's phonological development, but it is not a significant predictor of children's receptive vocabulary (Van Tonder et al., 2019). For child-led literacy activities, researchers neither found an association with phonological awareness nor an association with receptive vocabulary that could be

regarded as especially strong (Van Tonder et al., 2019).

In contrast to the activities only participated in by parents or children, parent-child activities were found to influence literacy and language skills to a very significant extent. Firstly, those activities involving the direct teaching of literacy skills fall to be regarded as a significant predictor of children's print knowledge, receptive vocabulary, expressive vocabulary, letter-name knowledge, letter-sound knowledge, and syntactic skill, but are not closely related to children's phonological awareness (Haney & Hill, 2004; Stephenson et al; 2008). Then, as to parent-child activities that do not involve direct teaching practices, children's reading interest, letter-sound knowledge, and morphological development are found to correlate strongly with this aspect of HLE (Dobbs-Oates et al., 2015; Justice & Kaderavek, 2015; Sénéchal et al., 2008; Weigel et al., 2006). However, an unexpected finding here is that different research studies yielded contradictory results on the contribution made by this aspect of HLE to children's print knowledge, receptive language skills, expressive language skills, letter-name knowledge, phonological awareness and narrative skills. While some researchers recognised such correlations, some other researchers found these associations to be relatively weak (Anderson et al., 2019; Burgess et al., 2002; Carroll et al., 2019; Gest et al., 2004; Kim et al., 2015; Sénéchal et al., 2008; Van Tonder et al., 2019; Weigel et al., 2006).

All the associations discussed above are listed in the following table (Table 2)

7. Discussion

7.1 The inherent logics of the established associations between HLE and children's literacy and language development

Firstly, children's parental demographics were found to be strongly related to children's receptive vocabulary, expressive vocabulary and syntactic skills. On the one hand, parents with a high level of education tend to grasp large numbers of vocabulary items and be familiar with grammatical knowledge. In addition, their work may also involve them having a strong ability to use different language skills as part of daily life. Therefore, when children communicate with their parents, it is possible for such children to be exposed to the vocabulary and grammatical knowledge their parents use (Duncan & Brooks-Gunn, 2000; Snow et al., 1998). On the other hand, parents with higher levels of educational tend to cultivate a friendly style of family interaction at home in which children are encouraged to express their ideas and to communicate with their parents. Children in such a language environment often have more opportunities to learn from their parents and to practice their language and literacy skills (Lareau, 2003).

Similarly, parental attitudes towards literacy and language are found to play an important role in both children's development of receptive language skills and phonological development. For the direct association between parental literacy attitudes and children's receptive language skills, one possible explanation is that parents who express positive attitudes towards literacy also tend to cultivate an atmosphere of enthusiasm for literacy and language learning at home. Their recognition of the importance of language and literacy learning and enjoyment of doing literacy activities together with children tends to facilitate the presence of a literacy-rich environment that offers children increased opportunities to grasp diverse vocabulary and grammatical knowledge (Weizman & Snow, 2001). In addition, the contribution of parental literacy beliefs to children's phonological awareness can be explained in terms of the meditational role of the receptive vocabulary. In previous studies, receptive vocabulary has been found to exert a strong influence on the decoding skills, which comprise phonological awareness, and print and letter knowledge (Poe et al., 2004; Speece et al., 2004). Thus, parental literacy attitudes contribute to children's phonological awareness via the influence on receptive vocabulary first.

Passive HLE's association with phonological development is noted in particular by one article in this review. This finding also be explained by the mediational role of the receptive vocabulary. According to van Steensel (2006), adults who frequently read themselves or engage in personal literacy activities tend to use richer vocabulary in the course of their daily life, resulting in the development of their children's vocabulary. Having regard to the fact that children's development of vocabulary exerts a strong influence on children's phonological development (Poe et al., 2004; Speece et al., 2004), the association between passive HLE and children's phonological development falls to be regarded as a natural consequence of this.

Among all the associations between parent-child activities (not direct teaching behaviours) and

children's literacy and language development, there is no controversy in relation to contribution of this aspect of HLE to children's print knowledge and reading interest. Firstly, young children's reading interest, though not a concrete skill, is an important component of children's early literacy development (Dobbs-Oates, 2015). This domain of literacy and language development is more easily developed when children come to be interested in books or other reading materials. Therefore, if a child's parents frequently visit libraries with their children or read books with them, such close exposure to books and other reading materials makes it possible for the children to develop interest in these literacy materials and then read them. In terms of how parent-child literacy activities contribute to children's print knowledge, on the one hand, frequent exposure to literacy materials in diverse activities allow children to acquire some basic print-concept knowledge such as print directionality, and upper-versus lower-case letters unintentionally. On the other hand, more exposure to books or literacy-related activities may provide children with more chances to understand the print-meaning relationship (van Kleeck, 1998).

Finally, in the selected review articles, no dispute arises in relation to the contribution of parental direct teaching behaviours to children's print knowledge, letter-sound knowledge or letter-name knowledge, which is in line with the findings of Kirby and Hogan (2007) and Sénéchal and LeFevre (2002). One reasonable explanation for this is that, when parents explicitly teach children how to write or read letters and words, the child's attention is focused on the printed text and printed letters rather than on the associated meaning or content (Evan & Shaw, 2008; Hindman et al., 2008).

However, there are some controversial findings in review articles. The disputes identified mainly relate to the informal literacy activities that do not involve direct teaching behaviours and children's print knowledge, receptive language skills, expressive language skills, letter-name knowledge, phonological awareness or narrative skills. Through comparing the samples and measured variables of the selected articles, it was found that these discrepancies mainly stem from the fact that different items have been used to measure the same aspect of HLE or the same domain of literacy and language development.

8. Conclusion

Table 2: An overview of the associations between HLE and children's literacy and language development.

	Print knowledge	Children's reading interest	Receptive vocabulary	Expressive vocabulary	Letter-name knowledge	Letter-sound knowledge	Phonological awareness	Narrative skill	Morphological skill	Syntactic skill
Parental demographics			Weigel et al (s) Carroll et al (s)	Weigel et al (s)	Carroll et al (w)	Carroll et al (w)	Carroll et al (s)			Weigel et al (s)
Parental attitudes and beliefs			Weigel et al (s) Stephenson et al (s)		Stephenson et al (w)	Stephenson et al (w)	Stephenson et al (s)			Weigel et al (s)
Passive HLE			Van Tonder et al (w)				Van Tonder et al (s)			
Parent-child activities (indirect teaching behaviours)	Weigel et al (s) Kim et al (s)	Weigel et al (s) Dobbs-Oates et al (s)	Weigel et al (w) Van Tonder et al (s) Burgess et al (s) Carroll et al (s) Kim et al (s) Gest et al (s)	Weigel et al (w) Burgess et al (s) Sé né chal et al (s) Kim et al (s) Gest et al (s)	Anderson et al (w) Kim et al (s) Burgess et al (s)	Kim et al (s) Burgess et al (s)	Van Tonder et al (w) Anderson et al (w) Gest et al (w) Burgess et al (s) Carroll et al (s) Kim et al (s)	Anderson et al (s) Sé né chal et al (w)	Sé né chal et al (s)	Weigel et al (w) Burgess et al (s) Sé né chal et al (s) Gest et al (s)
Parent-child activities (direct teaching behaviours)	Dobbs-Oates et al (s) Haney & Hill (s)		Haney & Hill (s)	Haney & Hill (s)	Stephenson et al (s) Haney & Hill (s)	Stephenson et al (s) Haney & Hill (s)	Stephenson et al (w)			
Child-led literacy-related activities			Van Tonder et al (w)				Van Tonder et al (w)			

Note. (s) represents strong association; (w) represents weak association

This study provided a systematic overview of existing studies that examined how particular aspects of HLE are differentially associated with children's various literacy and language skills. However，in the process of synthesising and analysing data, some limitations were also found, originating from problems associated with the design of this study itself, as well as those associated with the selected primary research articles. As to the research design, a major limitation was established in relation to classifying shared book reading as parent-child activities (indirect literacy-teaching behaviours). Initially, not separating "shared book reading" as a single category was done for the generality of each HLE aspect summarised in this study. However, in the following data-analysis, it emerged that, in many of the selected articles, researchers equate parent-child literacy activities with shared book reading or only explore the shared book reading's contribution to children's literacy and language development. This does give rise to uncertainty in terms of whether, in this study, these literacy and language skills are influenced by the combined effects of multiple parent-child literacy activities or shared book reading only. Therefore, for future studies in this field seeking to examine the contribution of parent-child literacy activities, it would be preferable not to measure shared book reading with other literacy activities.

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