

Home Language Environment, Emergent Literacy and Executive Functions in Preschool Children: A Literature Review

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Abstract. The preschool years are an important stage for emergent literacy and executive function development. The home language environment is often treated as a major influence, yet studies do not always reach the same conclusions. One reason is that key concepts are defined and measured in different ways. This review examines evidence on the links between the home language environment, emergent literacy, and executive functions in preschool children. Research shows a broadly positive association between the home language environment and emergent literacy. The link with executive functions is less consistent. It seems to depend more on the quality and structure of parent-child interaction than on the amount of language input alone. Responsive interaction may support language learning and self-regulation at the same time. The review brings these two pathways together and considers their value for future research and early childhood practice.

Keywords: home language environment, preschool children, emergent literacy, executive functions, parent-child interaction

1. Introduction

Emergent literacy develops before children begin formal schooling. Much of this early development takes place through language exchanges at home. The preschool years, usually defined as ages two to six, bring rapid changes in language, thinking, and self-regulation. The Home Language Environment (HLE) includes the language children hear and use at home. It also covers conversations, storytelling, and shared book reading. In this review, emergent literacy refers to the skills that prepare children for later reading and writing. These include vocabulary, oral comprehension, narrative ability, phonological awareness, alphabet knowledge, and print awareness [1]. Executive functions (EF) also shape how children take part in these activities. They help children focus attention, hold information in mind, and guide their behaviour towards a goal [2].

Home literacy activities do not all work in the same way. Longitudinal research links informal activities, such as shared reading, more often with oral language. Direct teaching activities are more closely linked with letter knowledge and phonological awareness [1]. Other studies connect the home literacy environment with EF and school readiness [3]. This suggests that family interaction may support language and self-regulation together. Conversational turn-taking is especially useful as

a measure because it captures what happens during real interaction. It also shows how children practise attention, memory, and control while taking part in a conversation [4].

Few studies place HLE, emergent literacy, and EF within one framework. They also do not fully explain why results vary. This review considers the links between the three areas and explores two possible routes: a language pathway and a self-regulation pathway. It also draws out implications for research, families, and early childhood education.

2. Literature review

Research on HLE, emergent literacy, and EF has produced mixed results. Much of this variation comes from differences in definitions, measures, and child outcomes. The following sections examine three issues: types of home literacy activity, the role of interaction quality and family structure, and the mechanisms that may connect HLE with early learning.

2.1. Different types of home literacy activities and their links to emergent literacy components

A common finding is that different home literacy activities relate to different skills. Sénéchal and LeFevre followed children for five years and separated informal activities from formal teaching activities [1]. Shared reading, storytelling, and discussion were linked more strongly with vocabulary, oral comprehension, and narrative ability. Teaching letters, practising sounds, and doing writing activities were linked more closely with letter knowledge and phonological awareness [1]. This difference helps explain why reading frequency alone often gives unclear results. Frequency does not show whether reading includes a rich conversation or simple repetition. It also does not show whether parents directly teach letters and sounds.

Later research gives more attention to the quality of interaction and the support offered by adults. Krijnen and colleagues considered the use of print, the purpose of an activity, and the presence of language scaffolding [5]. Scaffolding may include open questions, expanded responses, predictions, and explanations. These features help explain why the same activity can lead to different literacy outcomes. Counting reading sessions is therefore not enough. It is also important to know whether children can share ideas, retell events, and explain their thinking.

The language being learned can also affect the pattern of results. Inoue and colleagues compared languages with different levels of spelling consistency [6]. They found that HLE may support early literacy through different basic skills in different languages. A single total literacy score can hide these differences. Studies need to separate language comprehension from code-related skills and also distinguish between informal activity, direct teaching, and interaction quality.

The positive association between HLE and emergent literacy should not be read as clear proof of cause. Puglisi and colleagues argue that HLE may be related to literacy differences without being their direct cause [7]. Parental literacy, family resources, and educational expectations can affect both home practices and child outcomes. Correlational findings should therefore be interpreted with care. Studies also need to control for socioeconomic status (SES), parental education, the child's earlier ability, and parental literacy. The overall association is quite consistent, but the size and cause of specific effects remain less certain.

2.2. Interaction structure, interaction quality, and executive functions

The link between HLE and EF is less clear than the link with emergent literacy. EF usually includes working memory, inhibitory control, and cognitive flexibility [2]. These skills allow children to stay

focused, remember rules, manage impulses, and adjust their behaviour. HLE may influence these skills through the way family interaction is organised. Turn-taking, clear routines, persistence, and parental support may matter more than book numbers or reading frequency.

Korucu and colleagues found that the home literacy environment was related to both preschool EF and school readiness [3]. Shared activities may therefore offer more than language input. They also give children chances to practise self-regulation. During reading or storytelling, children need to wait, listen, remember details, and answer questions. Each of these actions involves EF.

The structure of family activities may explain more than activity frequency. The Home Executive Function Environment scale measures daily organisation, clear rules, cognitive stimulation, and parental support for self-regulation [8]. These measures describe the experiences children meet at home more closely than book counts do. Predictable routines can help children learn rules. Turn-taking games can support waiting and impulse control. Small tasks with a clear goal may also build persistence and planning.

The picture is more complex in bilingual and multilingual homes. Children may switch languages across people and situations, which could involve inhibitory control and flexibility. However, findings are not consistent. Verhagen and colleagues found that the link between HLE and inhibitory control in bilingual three-year-olds depended on family language patterns and the task used [9]. Haft and colleagues also warn that language background can be confused with cognitive ability [10]. Some EF tasks require a high level of language, so low scores may reflect language demands rather than weak EF. Research should therefore report language use, interaction quality, home resources, and the language demands of each task. Child language ability and family background also need to be controlled.

Other parts of family life can shape these links. Horowitz-Kraus and colleagues found that preschool EF was positively related to HLE, but it was also associated with screen time and parental EF [11]. HLE should therefore not be treated as the only explanation. Family stress, parental self-regulation, SES, and screen use may all affect the results. The evidence does not support a simple claim that more reading always leads to stronger EF. Stable, responsive, and well-structured interaction appears to be more important.

2.3. Possible mechanisms linking the home language environment, emergent literacy, and executive functions

High-quality parent-child interaction may support both literacy and EF because the same activity serves two purposes. It provides useful language experience and also gives children practice in attention, memory, turn-taking, and response control.

Through the language pathway, interactive reading, storytelling, and daily conversation expose children to vocabulary, sentence structures, and narrative forms. Open questions and prompts encourage children to predict, explain, and organise their ideas. Adults can also expand a child's answer and help make the meaning clearer. These exchanges support vocabulary, oral comprehension, and narrative skills [1, 5]. The value of HLE therefore lies in meaningful participation, not simply in the amount of speech a child hears.

The self-regulation pathway concerns the way interaction exercises EF. Working memory, inhibitory control, and cognitive flexibility are central to learning [2]. A child must wait for a turn and avoid interrupting during a conversation. While listening to a story, the child must remember earlier information and connect it with new events. Changes in the story may also require the child to revise an answer. Everyday interaction can therefore provide regular practice in these skills.

Research on conversational turn-taking offers evidence at the level of process. Romeo and colleagues found that a family intervention increased conversational turns and was linked with changes in child outcomes [4]. The important feature is the exchange itself, rather than talk in general. Children respond, combine new information with what they already know, and adjust their expression. These actions may support language development as well as attention, working memory, and inhibition.

Direct evidence for the full dual pathway is still limited. Many studies examine HLE and literacy, or HLE and EF, but few measure all three together. Even fewer test whether EF explains part of the link between HLE and literacy. Evidence for a pathway through language ability is more direct [7]. Studies that measure interaction quality, EF, and emergent literacy in the same design offer stronger support for the proposed mechanism. Separate associations can support the theory, but they cannot confirm the full pathway.

3. Illustrative research evidence

Two areas of research show how HLE has been studied in practice. One focuses on interaction processes, including turn-taking, responsiveness, and structure. The other focuses on shared picture-book reading, especially dialogic and interactive approaches. Together, they show the benefits and limits of process-based and activity-based measures.

Process studies examine what happens during an exchange. Romeo and colleagues used conversational turn-taking as an indicator of interaction quality [4]. This measure goes beyond reading frequency and comes closer to the possible mechanism. Children must remain attentive, remember and update information, control interruptions, and adapt what they say. These demands match core areas of EF [2]. However, observation, audio recording, and intervention studies can be costly. This often limits the number of families included.

Shared picture-book reading has a wider evidence base. A systematic review and meta-analysis by Dowdall and colleagues found that these interventions generally improve child language [12]. Benefits were stronger when adults asked questions, expanded children's answers, and encouraged them to tell the story. Such findings have clear practical value because families can use these strategies at home. Yet most studies focus on vocabulary and comprehension. EF is often not measured. It is therefore unclear whether EF contributes to the benefits of shared reading or explains why children respond differently.

Process studies can explain interaction more clearly, but they are harder to carry out. Shared-reading studies are easier to apply, yet they give less attention to EF. Future longitudinal and experimental work could combine these approaches. Adding EF measures to shared-reading interventions would allow researchers to test whether EF acts as a mediator.

4. Discussion

Across the studies, several patterns are clear. HLE has a fairly stable positive association with emergent literacy, especially with language comprehension. Its relationship with EF varies more across studies. Interaction quality, family structure, and measurement choices appear to explain much of this variation. HLE may support early learning through both language development and self-regulation.

Shared reading, storytelling, and conversation give children access to vocabulary, context, and narrative experience. They are often linked with vocabulary, oral comprehension, and narrative skills [1, 5, 6]. Letter knowledge, phonological awareness, and print concepts are more closely tied to

direct teaching and focused support [1, 5]. This is why reading frequency cannot explain every area of emergent literacy.

The evidence on HLE and EF is more uneven. Measures such as book numbers and weekly reading frequency show family investment, but they reveal little about the interaction itself. Turn-taking, clear rules, and interactive questions describe the child's cognitive involvement more directly and may show stronger links with EF [4, 8]. EF measures also differ in their language demands, cultural familiarity, and testing setting. These differences are especially important in bilingual studies, where language ability can influence task performance [9, 10]. Results should therefore be read in relation to the measures used and the families included.

The language pathway has stronger support. Responsive interaction builds vocabulary, oral comprehension, and narrative ability. The self-regulation pathway is also reasonable because literacy activities require attention, memory updating, rule-following, and control of irrelevant responses [2]. Turn-taking, clear routines, and goal-based tasks may give children regular EF practice [8]. Even so, direct tests of the full pathway from HLE to EF and then to emergent literacy remain rare. It should be treated as a well-supported explanation that still needs direct testing, rather than as a confirmed causal chain.

The practical message is not simply that adults should read more often. The way they interact with children also matters. During reading and daily conversation, parents can ask open questions, expand an answer, and invite the child to retell an event or explain a reason [12]. Clear routines and turn-taking rules may also support waiting, persistence, and self-control [8]. In bilingual and multilingual homes, this does not mean replacing the home language with the majority language. Rich and responsive interaction remains valuable in the language, or languages, that the child knows best.

Future studies should separate HLE resources, activity frequency, interaction quality, and language scaffolding. Emergent literacy and EF should be measured in the same study so that their relationship can be tested more directly. Longitudinal and intervention designs would also strengthen claims about cause. Research with bilingual and multilingual families should describe home language use, child language ability, and the language demands of EF tasks. This would reduce the risk of treating language differences as cognitive differences. A full systematic review would also need a planned search strategy, clear inclusion and exclusion criteria, and a reported screening process in line with review guidance [13].

5. Conclusion

This review examined the links between HLE, emergent literacy, and EF in preschool children. Home language and literacy interactions are generally associated with stronger vocabulary, oral comprehension, and narrative skills. The relationship with EF depends more on interaction quality and family activity structure than on reading frequency or resources alone. Turn-taking, responsive support, and shared meaning-making may allow children to practise language and self-regulation together. Families and early childhood educators can use dialogic reading, expanded responses, and turn-taking conversation to encourage active participation. The review is limited by its narrative approach. The included studies also differ in their measures and in how they control for confounding factors. Longitudinal and intervention research is needed to test the proposed pathways more directly.

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