

Children's Language Development: Environmental Factors, Interactions, and Challenges in the Digital Era

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ABSTRACT

Children's language development is a complex process influenced by social interactions, the environment, and individual factors. Technological advances add a new dimension through screen exposure, which impacts language acquisition. This literature review synthesizes five international journal articles discussing the influence of screen time, conversational turn-taking, active learning, early detection of language development disorders, and individual differences in bilingual children. The analysis shows that the quality of interactions, child agency, and digital ecology management are crucial for maximizing language development. This study offers an integrative model as a reference for educational, clinical, and public policy strategies.

INTRODUCTION

Children's language development is a multidimensional process that encompasses cognitive, social, and emotional growth, and serves as the foundation for lifelong learning and communication. It not only enables children to interact with their environment, but also functions as a tool for conceptualizing experiences, constructing knowledge, and shaping identity (Donnelly & Kidd, 2021). From infancy, children demonstrate an innate ability to distinguish sounds and link them with meaning, but the trajectory of their linguistic progress is largely influenced by environmental quality and the richness of social interactions. Children raised in environments with responsive and stimulating verbal engagement tend to develop stronger vocabulary, syntactic competence, and pragmatic skills, whereas those deprived of such exposure are at higher risk of delays and long-term language difficulties. Thus, language acquisition cannot be viewed as an isolated developmental task, but rather as the product of dynamic interactions between biological predispositions, social exchanges, and cultural-ecological contexts.

In the digital era, the nature of children's linguistic environments has transformed significantly. Electronic media, particularly through mobile devices and streaming platforms, has become an omnipresent influence. Research by Karani, Sher, and Mophosho (2022) reveals that excessive screen time during early childhood can displace opportunities for crucial face-to-face interactions, leading to reductions in conversational turn-taking, joint attention, and active feedback – all of which are vital predictors of language growth. However, media exposure should not be viewed solely as a risk factor. When accompanied by co-viewing strategies, active parental scaffolding, and age-appropriate content selection, digital media can serve as an auxiliary language learning tool. Children may benefit from the introduction of new vocabulary, exposure to multiple registers, and multimodal forms of communication that combine visual, auditory, and symbolic input. These nuanced findings suggest that the dichotomy between "harmful" and "beneficial" media exposure must be replaced by a more context-sensitive framework emphasizing quality, duration, and parental involvement.

Another central factor highlighted in recent scholarship is the mechanism of conversational turn-taking. Donnelly and Kidd (2021) demonstrated that frequent reciprocal interactions not only predict vocabulary expansion but also create a positive feedback loop in which children's growing lexical knowledge fosters greater participation in dialogue, thereby further reinforcing language acquisition. This bidirectional relationship underscores the centrality of responsive communication in shaping both receptive and expressive skills. Complementing this, Foushee, Srinivasan, and Xu (2023) proposed an active learning perspective in which children are positioned not as passive recipients of input, but as intentional agents who selectively attend to, experiment with, and internalize language. This reconceptualization shifts the emphasis from quantity of exposure to the interplay between child agency and the responsiveness of the linguistic environment, highlighting the importance of curiosity-driven exploration in fostering meaningful learning experiences.

On the clinical front, early detection of developmental challenges is critical. Sansavini et al. (2021) emphasized the importance of monitoring early indicators of Developmental Language Disorder (DLD), including delayed gestural communication, limited vocabulary growth, and delays in combining words into syntactic structures. Early identification through systematic screening can significantly improve the effectiveness of interventions, as timely support minimizes the risk of academic underachievement and social-emotional difficulties. The challenge becomes even more pronounced in bilingual populations, where developmental trajectories differ from monolingual norms. Paradis (2023) showed that variation in dual language development is heavily shaped by the quality of linguistic input, the consistency of home language use, and literacy practices. While bilingualism may initially appear to slow down certain aspects of language acquisition, in the long term it provides cognitive benefits such as enhanced executive functioning, metalinguistic awareness, and problem-solving skills. Yet, these differences often complicate clinical assessments, leading to risks of over- or under-identifying language disorders in bilingual children. Hence, the development of culturally sensitive, bilingual-informed diagnostic tools is an urgent priority for both clinicians and educators.

Synthesizing these perspectives, this study proposes an integrative model that positions children's language development at the intersection of four key pillars: media management, quality social interactions, child agency, and early detection. This ecological-interaction-agency framework highlights how environmental resources, parental and teacher responsiveness, children's own exploratory behaviors, and timely clinical monitoring collectively determine developmental outcomes. By situating language learning within a broader ecological system encompassing home, school, and digital environments, this model provides a comprehensive guide for researchers, practitioners, and policymakers.

The practical implications of this synthesis are far-reaching. For educators, it emphasizes the incorporation of responsive communication strategies in early childhood classrooms, alongside structured opportunities for collaborative play and interactive storytelling. For parents, it stresses the importance of dialogic reading, everyday conversational engagement, and mindful regulation of screen time through active co-viewing practices. For clinicians, it underscores the necessity of early and culturally responsive screening, particularly for children in bilingual or multilingual settings. Finally, for policymakers, it calls for cross-sectoral collaboration to design programs that ensure all children – regardless of socioeconomic background – have access to rich linguistic environments, timely screening services, and supportive interventions.

In conclusion, children's language development must be understood as a holistic and dynamic process influenced by intertwined social, environmental, digital, and individual factors. The quality of direct interaction remains the most powerful driver of linguistic growth, yet digital media, when guided actively, can serve as a complementary learning tool. Early detection of developmental risks, especially in bilingual populations, is crucial for preventing long-term disadvantages. Future research should move beyond descriptive synthesis by

empirically testing the proposed integrative framework through longitudinal, cross-cultural, and interdisciplinary studies. Such endeavors will not only deepen theoretical understanding but also provide evidence-based strategies to enhance language development outcomes in the digital age.

LITERATURE REVIEW

The research design used in this study is a narrative-integrative literature review, which aims to synthesize key findings from various scientific sources into a coherent conceptual framework (Snyder, 2019). This approach allows researchers to combine research findings from diverse methodological backgrounds, resulting in a more comprehensive understanding. In this context, five relevant international journal articles were selected to represent key themes in child language development. The narrative-integrative method focuses on identifying patterns, similarities, and differences across studies, rather than simply combining data quantitatively (Baumeister & Leary, 1997). Thus, this design provides a strong foundation for formulating theoretical and practical implications for child language development.

The data sources for the articles were taken from peer-reviewed journals with valid DOIs. The data sources used in this study were derived from scientific journal articles that have undergone a peer-review process, thus ensuring the validity and credibility of the reported findings (Gasparyan et al., 2015). Each article has a Digital Object Identifier (DOI) that facilitates publication tracking and verification. The selection of data sources was carried out by prioritizing internationally reputable journals, which have high publication standards and are indexed in trusted scientific databases such as Scopus or Web of Science. The article selection process also considered topic relevance and research recency, so that the literature synthesis reflects the latest developments in language development studies. With this approach, the quality and reliability of the data sources can be optimally maintained.

Inclusion criteria focused on children's language development, addressing environmental factors, interactions, or bilingualism. Inclusion criteria were established to ensure that selected articles were truly relevant to the research objectives (Higgins et al., 2022). Included articles must explicitly address language development in early childhood or preschool. Furthermore, the research must highlight at least one of three important aspects: environmental factors, social interactions, or bilingualism. This focus was chosen because all three aspects have been shown to have a significant influence on language acquisition (Paradis, 2023; Donnelly & Kidd, 2021). With these criteria, the scope of the literature synthesis becomes more focused and relevant to the research questions.

Data analysis involved extracting key findings, coding themes, and developing an integrative conceptual framework. Data analysis was conducted through three interconnected main stages. First, researchers extracted information from each article, including key findings, methodology, population, and research context (Snyder, 2019). Second, this information was coded into conceptual themes that reflected the relationships between factors, such as

interaction quality, child agency, and the influence of the digital environment. This coding process followed a thematic analysis approach to identify consistent patterns in the literature (Braun & Clarke, 2006). Third, the coding results were used to develop an integrative conceptual framework that combined cross-study findings into a single model that can serve as a theoretical and practical reference.

METHODOLOGY

To attain the objectives of the study, the descriptive correlational method was used in this research where sixty-six (66) AB Com. freshmen and senior students enrolled in the Bachelor of Arts in Communication program in the Academic Year 2023-2024 participated. The researchers collected responses from them through surveys conducted online.

In gathering the 1st, 2nd, 3rd and 4th data sets of the study, the researchers used online survey questionnaires as research instruments.

The researchers employed the quantitative survey instrument for the first phase with varying choices for the subjects to answer. The platform used by the researchers for the survey is Survey Monkey since the study revolved around the internet.

There were 10 news articles posted on a Facebook page. Seven news items came from fake news outlets while the other three were collected from credible media companies and institutions. Students were given independence in scrolling through reading and verifying the articles.

In gathering the data of the last phase, the researchers used SurveyMonkey as a platform that determined the factors why students misconceived fake from legitimate and vis-à-vis. The factors were then correlated with the level of the students' level of believability on online disinformation.

The researchers administered three phases of the study by giving the students the freedom to choose where they can respond to the survey comfortably using their mobile phones, computers, and laptops through accessing the Survey Monkey links which were created from an online survey development cloud-based software that provides free, customizable surveys and by answering what's required of the three surveys.

The participants of this research were the 1st year and 4th year Bachelor of Arts in Communication students who had a background in media as budding communicators. All in all, out of the 75 BA Comm. students enrolled in the 2nd semester of the A.Y. 2013-2024 66 students participated in the conduct of this study.

RESEARCH RESULT AND DISCUSSION

Input Quality and Quantity: Uncontrolled screen time can potentially reduce face-to-face interactions, which are crucial for language development (Karani et al., 2022). Excessive, unsupervised screen time can divert children from direct interactions with parents or peers. This face-to-face interaction is important because it provides immediate feedback that digital media cannot replace. Furthermore, unlimited screen time tends to be passive, depriving children of the opportunity to actively practice language skills. Research by Karani et al. (2022) shows that excessive screen time is associated with a decline in the quality of

children's everyday conversations. Although children may hear a large number of words from media, the quality often does not compare to human interaction. Therefore, screen time management is a crucial factor in ensuring the quality of language input children receive.

The Role of Co-Viewing - Active parental guidance while children use media can transform a passive experience into an interactive one.

Co-viewing, or actively watching together, allows parents to provide additional explanations regarding the content their children are watching. This guidance also provides opportunities to ask questions and encourage verbal responses from children. This way, screen time is not just a passive activity but becomes a rich language learning moment. A study by Karani et al. (2022) confirmed that co-viewing can improve children's understanding of new vocabulary. Furthermore, this interaction helps strengthen the emotional bond between parents and children. Therefore, the quality of guidance is key to maximizing the benefits of digital media.

Turn-taking creates a two-way relationship between interaction and vocabulary, demonstrating a mutually reinforcing mechanism (Donnelly & Kidd, 2021). Turn-taking is one of the most effective forms of social interaction in supporting children's language development. Every time children engage in reciprocal conversation, they have the opportunity to practice speaking and listening skills. Donnelly and Kidd (2021) found that increasing the frequency of turn-taking is directly proportional to children's vocabulary growth. Conversely, a richer vocabulary also encourages children to engage in conversation more frequently. This creates a positive cycle that accelerates language acquisition. Therefore, turn-taking should be encouraged in everyday interactions, both at home and at school.

Child agency through active learning enables children to optimally utilize language opportunities (Foushee et al., 2023). The concept of child agency in language learning means that children have an active role in selecting and utilizing learning resources. Foushee et al. (2023) emphasized that children who have control over their learning process are more motivated to explore language. Children can choose topics that interest them, making the learning process more meaningful. Environments that provide space for children to ask questions and experiment with language tend to result in better development. Furthermore, children's agency helps them internalize vocabulary and language structures more effectively. Therefore, children's active role in learning must be facilitated by adults.

DLD Risk Indicators - Delayed gestures, limited vocabulary, and delayed word combination are important signs (Sansavini et al., 2021).

Developmental Language Disorder (DLD) is often difficult to recognize in the early stages of a child's development. Sansavini et al. (2021) identified several risk indicators to watch out for, such as delays in the use of gestural communication. A limited vocabulary at a certain age also signals that a child needs further evaluation. Furthermore, delays in combining two or more words

can indicate a delay in syntactic development. Early detection of these signs is crucial for initiating timely intervention. With regular monitoring, the risk of long-term impacts of DLD on a child's academic and social abilities can be minimized.

Bilingual Constellation – Bilingual children require balanced input strategies for both languages (Paradis, 2023). Children growing up in a bilingual environment manage two different language systems simultaneously. Paradis (2023) emphasizes that balanced input is crucial for the optimal development of both languages. An imbalance, such as the dominance of one language, can hinder the development of the other. An effective strategy involves the consistent use of both languages in meaningful contexts. For example, one language is used at home and the other at school. This approach helps children master both languages without sacrificing competence in either.

The risk of misdiagnosis necessitates screening tools that must take the bilingual context into account for accuracy. Bilingual children often exhibit different patterns of language development than monolingual children. Without understanding this context, language assessments can result in misdiagnosis, either over- or under-identification. Paradis (2023) emphasized that screening tools need to be designed to distinguish normal differences resulting from bilingualism from symptoms of language disorders. This includes the use of bilingual norms in interpreting test results. Appropriate evaluation will prevent children from receiving unnecessary interventions or losing needed support. Therefore, the assessor's competence in understanding bilingual dynamics is crucial.

The Four Pillars Model, comprising media management, quality interactions, child agency, and early monitoring, forms a framework for intervention.

This four-pillar model synthesizes key findings from various studies on children's language development. The first pillar, media management, focuses on the quality and quantity of digital exposure. The second pillar, quality interactions, emphasizes the importance of responsive conversation in building vocabulary. The third pillar, child agency, emphasizes the child's active role in selecting and processing language input. The final pillar, early monitoring, aims to detect potential developmental challenges early. This framework can be used as a practical guide for parents, educators, and professionals.

Policy implications for schools, parents, and clinics include the need to work together to create a rich and supportive language environment.

Education policies should include programs that encourage language interaction from an early age. Schools can provide training for teachers to implement responsive communication strategies in the classroom. Parents should be educated about the importance of daily conversation and limiting screen time. Speech clinics can play a role in monitoring language development and providing interventions as needed. Cross-sector collaboration will ensure

children receive consistent support across environments. This will maximize children's language development potential in a sustainable manner.

CONCLUSIONS AND RECOMMENDATIONS

The quality of interaction is key to children's language development, while digital media needs to be managed with active guidance. Responsive interactions between children and adults help enrich the vocabulary and language structures they learn. Face-to-face contact provides opportunities for children to receive direct feedback, which is difficult to obtain from digital media. While digital media can be a learning resource, its use must be accompanied by active guidance to support the language acquisition process. With parental supervision and involvement, the potential of digital media can be maximized without sacrificing the quality of direct interactions.

- a. Early detection of DLD is crucial, especially in bilingual children.

Children with DLD often do not exhibit obvious symptoms in the early stages of language development. In bilingual children, differences in language development patterns can mask or mimic DLD symptoms, increasing the risk of misdiagnosis. Early detection through screening that is sensitive to the bilingual context helps identify children who need timely intervention. This step is crucial to prevent long-term impacts on their academic and social abilities.

- b. An integrative model combining environmental factors, interactions, agency, and early detection can guide policy and practice.

This model positions the home, school, and community environments as key components influencing children's language development. Quality interactions, both with parents and teachers, are key drivers of effective language acquisition. Children's agency is taken into account to ensure the learning process aligns with their interests and needs. Meanwhile, early detection is incorporated as a preventative strategy to address language barriers before they become more severe.

ADVANCED RESEARCH

Future advanced research should move beyond descriptive models by empirically testing the proposed integrative framework that combines environmental factors, interactions, agency, and early detection in children's language development. Longitudinal and cross-cultural studies are needed to evaluate how digital media management, parental responsiveness, and bilingual contexts interact to shape linguistic outcomes across diverse settings. Furthermore, the development of culturally sensitive and technology-assisted screening tools for early detection of Developmental Language Disorder (DLD), particularly in bilingual and multilingual populations, will be essential to reduce misdiagnosis and improve intervention timing. By integrating experimental, clinical, and educational approaches, future research can generate evidence-based strategies that inform both public policy and practical interventions, ensuring children's language development is supported holistically in the digital era.

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