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Parental Mediation of Toddlers' Screen Time and Its Perceived Effects on Language Development in Indonesia and Australia

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Abstract

This study explored parents' attitudes and strategies regarding their children's screen time. From parents' perspectives, it examined the effects of screen time on children's language development. Six mothers of children aged 12–36 months from Indonesia and Australia were recruited through purposive sampling, and data from interviews and observations were analyzed thematically using ATLAS.ti. The findings showed that parents selected entertainment and educational content according to their child's age, set and discussed screen-time rules, preferred interactive formats, and drew on government guidance. At the same time, their own device use also shaped how their children experienced screens. These patterns formed five themes: content, context, interactivity, technoference, and the macrosystem. Observations and interviews also showed children's progress in three language competencies, namely receptive language, expressive language, and vocabulary, with comprehension tending to develop ahead of expression. Parents perceived screen time as supporting language when content involved real human interaction and prompts to speak, and as a potential hindrance when content was fast-paced and overstimulating. These findings suggest that parents need accessible digital-parenting guidance that builds their digital literacy and encourages responsive interaction during children's media use. They point to the need for clearer national screen-time guidelines in Indonesia.

Keywords: screen time; language development; parental mediation; technoference; digital literacy; early childhood

Introduction

Electronic devices, screen-based gadgets, and digital media have become ubiquitous in children's lives. As digital screens grow more accessible and widespread, they are fundamentally reshaping childhood. Like a double-edged sword, the screens and digital media that children consume bring a complex mix of opportunities and challenges. Despite their benefits, they may pose risks to children's development and later academic performance. Keeping children attentive and preoccupied with screens is not difficult. A smartphone, tablet, or

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TV is convenient and accessible, combining motion, color, sound, and song in a single device. Because these devices are both appealing and practical, children increasingly attach themselves to screens every day during their golden period of development (Oktariani, 2022). The COVID-19 pandemic intensified this trend. Digital media immersion increased dramatically and transformed the family media environment, which prompted further research on the effects of screen media exposure and use on young children (Eyimaya & Irmak, 2021; Nagata et al., 2022; Ponti, 2023; Seguin et al., 2021).

Much of this research has focused on the duration of use, that is, how much time children spend on screens. Global survey data show that age is an important factor. The World Health Organization (WHO) recommends no more than one hour of screen time per day for children aged 2 to 4. Even so, almost all 2-year-olds (98%) viewed screens on a typical day, averaging 129 minutes daily, more than double the WHO-recommended maximum of 60 minutes (Duarte, 2026). Older children show similar patterns. In Australia, 65% of children aged 5–12 years averaged more than 2 hours of daily recreational screen use (Arundell et al., 2022). In Indonesia, data from the Ministry of Women's Empowerment and Child Protection (KPPPA) revealed that around 42% of children spent more than 4 hours per day on recreational screen use (Rusmini, 2025). These levels of use are a concern because screen time may displace other activities. Dore et al. (2025) proposed that media use duration may negatively affect language development by replacing time spent with parents or siblings, such as doing homework, engaging in creative play, or reading. McArthur et al. (2020) likewise found that children with high screen use reported higher levels of externalizing symptoms, poorer adaptive skills, and poorer achievement of developmental milestones. These findings point to the need for practitioners and educators to encourage parents and families to engage with technology in age-appropriate ways during this sensitive period of child development.

A growing body of research has examined the effects of unsupervised screen time on children's development in the early years of life (Heffler et al., 2022; Lissak, 2018; Madigan et al., 2019; Muppalla et al., 2023; Webb, 2023). Screen-time duration has been reported to affect children's behavior and adaptive skills (McArthur et al., 2020; Mesce et al., 2022; Sangadi et al., 2024), mental health (Hmidan et al., 2023; Huang et al., 2025), school readiness and achievement (Fathan, F. D., and Sekartini, 2024; McArthur et al., 2020), sleep quality (Przybylski, 2019), social and emotional development (Afrillianti, K. R., Aisyah, I., Puspanditaning, 2026; Kerai et al., 2022; Rusmini, 2025; Vasconcellos et al., 2025), motoric development (Bakht et al., 2025; Yulianto, 2025), language development and communication skills (Afrillianti, K. R., Aisyah, I., Puspanditaning, 2026; Kerai et al., 2022), receptive and expressive vocabulary learning (Jing et al., 2023), and speech delay (Anggrasari & Rahagia, 2020; Mardhatillah et al., 2024; Oktariani, 2022; Wati, 2021). Of these outcomes, speech delay has drawn particular concern because cases have been increasing, especially during and after the COVID-19 pandemic and around 5–8% of preschool-aged children in Indonesia experienced speech delay (Ikatan Dokter Anak Indonesia (IDAI), 2024). In

Australia, an estimated 500,000 children, or 9%, are affected (MCRI, 2025).

Previous research supports a link between excessive screen time and developmental delay risk in children. Varadarajan et al. (2021) found that increased screen time was significantly associated with delays in language acquisition and communication. In children younger than 2 years, screen time was associated with delays in more than two domains, including language. The same study also reported a very high prevalence of excessive screen time among children. Younger children appear especially vulnerable. Van Den Heuvel et al. (2019) studied parents of 18-month-old children and found that each additional 30 minutes of daily mobile media device use was associated with higher odds of parent-reported expressive speech delay. Anggrasari and Rahagia (2020) found a significant association between gadget use and speech and language development in children aged 3–5 years. Similarly, Bibi et al. (2022) found that children with more than two hours of screen exposure showed greater speech delay and communication difficulties than children with less than two hours. A systematic review of 14 articles by Mardhatillah et al. (2024) mapped the positive and negative impacts of gadget use on toddlers, the influence of use duration, and the role of parents and families in toddler development and in responding to toddlers at risk of speech delay. The review concluded that gadget use contributes to speech delay in toddlers, and that the longer use, the more likely speech and language development is to be delayed.

At the more severe end, a case study of a 25-month-old boy linked his speech delay to early media overexposure, a syndrome caused by overexposure to media at an early age and associated with speech delay and autism-like symptoms (Dieu-Osika et al., 2020). The study suggests that completely ceasing media and screen exposure may reverse the delay. In line with this finding, Sarfraz et al. (2023) found that the longer the period of screen exposure, the higher the risk that a child may develop autism spectrum disorder (ASD), which includes a lack of speech ability. The timing of exposure also matters, as the earlier children are exposed to screens, the higher their risk of developing ASD compared with children exposed later. Children exposed during their first year of life had a significantly higher risk of ASD at three years of age than other children. This may be because the younger brain is more prone to genetic variables that affect later development, whereas by age three the brain has already reached some developmental milestones (Chen et al., 2021; Kushima et al., 2022).

Social interaction in language development helps explain these findings. Children in their golden age of development need to learn to communicate using clear, correct language through direct examples (Alia & Irwansyah, 2018). This is especially true for the mother tongue, which children acquire through daily use during first language acquisition, a process in which technological media use should be minimized. Vygotsky built a theory about the connection between speech and thought. Thought is verbal, and it consists of structures of meaning drawn from the language we use. When children first encounter an object, they learn that language plays an important role in constructing that object in their experience. Later, they find meaning in that experience and understand it. Speech, as a form of language

expression, constructs meaning within children's thoughts (Brooks, 2017). For Vygotsky, social interaction through language is therefore indispensable to cognitive development because, through it, children learn to use language as a tool for constructing knowledge that helps them adapt and succeed in the future. Between the ages of 2 and 4, children use speech not only for social communication but also to solve tasks and to plan, guide, and monitor their behavior and self-regulation. Between 3 and 7 years of age, they develop more advanced processes to internalize what they express in speech as ideas and thoughts. Vygotsky stressed that language plays a key role in cognition (Santrock, 2014). As children spend more time on screens, everyday conversations become less frequent, even though this social side of language is fundamental to their development. Children who prefer visual screen activities to speaking may therefore build a weaker foundation for abstract thinking, which later shapes their higher-order thinking skills at school.

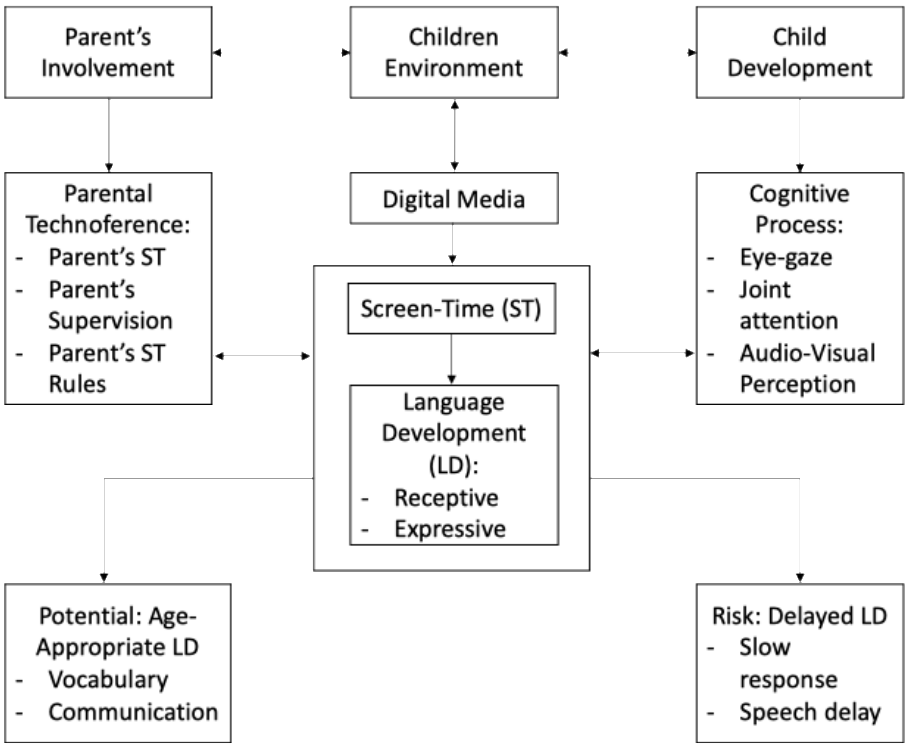
Digital technology is nevertheless reshaping young children's early experiences of speech and language. From their first months of life, children are required to master a range of modalities, such as words, images, and sound, with a variety of literacy tools, both traditional and digital (Sefton-Green, J., Marsh, J., Erstad, O., & Flewitt, 2016). Traditionally, children's literacy and learning achievements are indicated by the quality of their speech, how they interact, and their ability to perform as taught by adults, parents, or peers. However, the multimodality of digital media can also promote critical thinking by connecting content knowledge to the world, problem-solving, and innovative thinking, as it helps children read, write, and communicate (Gee & Hayes, 2011). Whether screens support or hinder language development therefore depends largely on how they are used, which makes parents' role central.

Parents play a significant role in ensuring appropriate gadget use and managing screen time to support children's speech and language development. Parents who implement rules and monitor their children's screen time see lower screen time among their children (Bhoi et al., 2025). Parental supervision is also critical to balance digital engagement and direct social interaction (Ricardo & Suparman, 2025). Recent research clearly calls for parents' relationships and involvement to shift from restriction to fostering mindful, intentional digital literacy and citizenship (Koliouli & Theodosiadou, 2026; D. Wu, 2026). Family circumstances strongly shape children's screen time. According to Eyimaya and Irmak (2021), gender, age, household income, mother's employment status, family rules about screen time, and inconsistent parenting practices were significant predictors of children's screen time. Varadarajan et al. (2021) identified mothers' screen time, screen use at bedtime, birth order (in children < 2 years), and school attendance (in children > 2 years) as factors associated with excessive screen time. Parents' own screen use also matters. Morris et al. (2022) found that cognitive processes such as eye-gaze following and joint attention tend to decrease when parents are unresponsive and busy with their screens. These processes are among the most important for language development from birth to age 5. Problematic screen use by both parents and children also negatively affects the quality of the

parent-child relationship (Konca et al., 2025). There is therefore an urgent need for family screen-time management and family digital-habit interventions that meet parents' and families' needs and challenges, help mitigate the negative effects of problematic screen use, and support healthier parent-child relationships in early childhood (Arundell et al., 2022; Konca et al., 2025).

Figure 1

Research Conceptual Framework



Parents' ability to manage screen time is also shaped by broader circumstances. Barg & Baker (2023) found that parents' perceptions of competence are influenced by socio-economic factors. Parents with better mental health and higher education may consider themselves competent and therefore believe they can support their child's cognitive, language, and socio-emotional development. These factors vary across national contexts. This research involved parents from Indonesia and Australia. The two countries share key similarities due to their geographical proximity and economic ties. However, they differ in demographic characteristics, economic stability, and governance systems (The Australia-Indonesia Center). Previous studies have provided scarce evidence on parents' perspectives in both countries, and this study aims to fill this gap. Because children's speech and language development is now closely linked to digital media, exploring parents' perspectives can provide further evidence on screen-time overexposure and its risk of developmental

delay in children (see the conceptual research framework in Figure 1). Accordingly, this research aims to explore how parents perceive and understand their attitudes and strategies regarding their children's screen time and to examine the effects of screen time on children's language development from parents' perspectives.

These studies point to the important role of parents and families, as children's speech and language development is now closely linked to digital media. By exploring parents' perspectives, this study seeks to provide further evidence on the risks of screen-time overexposure and developmental delay in children (see the conceptual research framework in Figure 1). Accordingly, this research aims to explore how parents perceive and understand their attitudes and strategies regarding their children's screen time and to examine, from parents' perspectives, the effects of screen time on children's language development.

Method

Research Design

This study used a qualitative design to explore parents' perspectives on patterns of screen-time exposure among children aged 12–36 months and the implications for children's language development. Using thematic analysis, the study addressed two research objectives: exploring how parents regulate screen time and examining how they perceive its effects on children's language development. Thematic analysis was considered suitable because the research objectives focus on people's conceptualizations, perspectives, or ways of thinking about particular social phenomena (Willig, 2022). It also accommodates both data-driven and theory-driven coding; this study adopted the latter, as the analysis was guided by a strong conceptual framework.

Instruments

Semi-structured interviews were conducted with mothers and focused on areas aligned with the study's first aim to answer the first research question: parents' perceptions, attitudes, and strategies related to their children's screen time. The interview guide was derived from items in the Digital-Screen Exposure Questionnaire (DSEQ) (Kaur et al., 2021). For the second research question, we conducted non-participant observation on children's language development, based on communication indicators from the communication development checklist in The Ages & Stages Questionnaires, Third Edition (ASQ III) (Squires, J. and Bricker, 2009).

Participants

The study population included families from Indonesia and Australia. Mothers were recruited to participate purposively, based on several inclusion criteria: currently live in Indonesia or Australia, age > 19 years (meet the legal requirement for marriage), parent of a child aged 12-36 months, child has no diagnosis of physical and psychological problems, and willing to participate voluntarily by completing an informed consent after reading the research explanation and procedure: https://bit.ly/4km4XRH. The sample comprises 6 mothers from Indonesia and Australia (see Table 1).

Table 1
Characteristics of Participants

Characteristics	P1	P2	P3	P4	P5	P6
Country	Indonesia	Indonesia	Indonesia	Australia	Australia	Australia
Mother's age (years)	32	22	42	39	33	44
Father's age (years)	39	23	40	37	33	40
Mother's Education Level	Junior High School	Vocational High School	S1	S1	S3	S2
Father's Education Level	High School	Vocational High School	D3	High School	S1	S1
Mother's Occupation	Farmer/ Enterpreneur	Housewife	Housewife	Preschool Teacher	Health Economist	PhD Student
Father's Occupation	Farmer/Self Employee	Private Sector Employee	Private Sector Employee	Admin Assistant	Economist	Private Sector Employee
Child's age (months)	21	24	14	35	15	36
Child's Gender	Boy	Boy	Boy	Boy	Boy	Girl

Data Collection

All interviews were audio-recorded and transcribed verbatim. As the interview questions were created with consideration of previous literature, the qualitative data were analyzed using an inductive thematic analysis. Observations were conducted using a language development checklist with clear instructions, tailored to the participant's child's age.

Data Analysis

Thematic analysis identifies, analyzes, organizes, describes, and reports themes from qualitative data. Its flexibility lets researchers identify patterns or themes in large datasets, interpret a theme's importance regardless of its frequency or size, and explore participants' perspectives. In other words, thematic analysis involves searching for themes that emerge as important for describing the phenomenon and constitute a form of pattern recognition within the data (Willig, 2022). ATLAS.ti qualitative data software was used to code the data within this framework, allowing codes to emerge inductively. The results will present key themes from parent interviews and findings from observations of children.

Findings and Discussion

Findings

This section presents the findings in two parts, following the two research objectives:

exploring how parents perceive and understand their attitudes and strategies regarding their children's screen time, and examining the effects of screen time on children's language development from parents' perspectives. Interview data were analyzed in ATLAS.ti to identify codes, similar words or phrases that recurred. The authors then grouped these codes into themes and further broke them down into more specific subthemes. For the first objective, five themes emerged: content (the type of media children accessed), context (parents' role in screen time), interactivity, technoference (mothers' technology use around children), and the macrosystem (government digital policy). Each theme contains several subthemes, as summarized in Table 2. For the second objective, observations and interviews revealed three themes, each representing a language competency that marks children's language development: receptive language, expressive language, and vocabulary.

Table 2

Themes and Subthemes of Screen Time Exposure Emerge from Interviews

Theme	Subthemes
Content	Entertainment content
	Educational/learning content
Context	Parent's supervision and feedback
	Parent's control/rules
	Parent's digital literacy
Interactivity	Interactive digital media
	Noninteractive digital media
	Interactivity with parents using non-digital media
Technoference	Mother's technology use
	Child's response to mother's screen time
Macrosystem	Government's digital policy

Parents' Attitudes and Strategies Regarding Children's Screen Time

The first theme, content, refers to the type of digital material parents allow their children to access. Two subthemes emerged from parents' responses: entertainment content and educational or learning content. Entertainment content is audio or video media created primarily to entertain, such as cartoons, animated movies or series, music videos, nursery rhymes, and reality videos on YouTube. Parents described this content as something their children accessed for enjoyment rather than with the intention to learn, as one parent explained:

> So we listen to children's songs, like that. Just Spotify. Then, if there are children's songs that do not work. *(P5, l.237)*

Educational or learning content, by contrast, is audio or video material intended to inform or

teach children. Parents reported choosing this type of content according to their child's age. It includes instructional videos; material that teaches religious practices, such as reciting Al-Qur'an, shalawat, Asmaul Husna, or daily prayers; basic knowledge, such as colors, shapes, letters, and numbers; and creative activities, such as drawing, coloring, and handcrafting. Parents valued this content particularly when it invited their children to respond and practice speaking:

> He interacts; he sings a lot. So there are a lot of his songs there. That is why he knows The Wheels on the Bus, which is on Miss Rachel. There are a lot of his songs, and he is like, 'Can you say, mama? Mama. Can you say papa?' Something like that. So he teaches his speech too, like that. *(P5, l.220)*

The second theme, context, concerns the role parents play while their children use screens. It covers adults' co-use of media with children, or joint media engagement, including the interactions and conversations that surround the content. Three subthemes emerged: parents' supervision and feedback, parents' control or rules, and parents' digital literacy. Parents provided supervision and feedback by monitoring their children's screen time and commenting on or starting conversations about the digital content. They exercised control by setting rules, applying them consistently, and discussing them with their children. Parents' digital literacy showed in their efforts to learn about digital media and stay up to date on children's online safety. These strategies determined not only how long children used screens but also which programs parents judged suitable. One parent chose a program with a human presenter over animated content as a way to limit screen time while still exposing the child to real interaction. Another allowed only the audio of a fast-paced animated series because its visuals were considered overstimulating and a potential hindrance to the child's development:

> We only gave Miss Rachel… if, for example, we actually tried to limit screen time. So, we think about Miss Rachel; she speaks quite a lot, and her interactions are truly human, not animated. *(P5, l.204–206)*
>
> Because, like Coco Melon, I only gave her the sound. Because she had too much color. Too much stimulation and too fast. The images were too fast. The colors were too bright. So I did not give her that. I limited the screen because I felt it would hinder her. Not that it would, but it had a big potential to hinder her development. I believed that. But I did not give it at all. I gave it. *(P6, l.263)*

The third theme, interactivity, refers to the level of interaction and conversation that takes place with the media or platform. Its three subthemes are interactive digital media, noninteractive digital media, and interactivity with parents using non-digital media. Interactive digital media allow children to take part in two-way exchanges, for example with a conversational agent on a digital platform or with family members through video calls, whereas noninteractive digital media present content that children receive without responding. Interactivity also takes place between children and parents through non-digital media, such as books, toys, and flashcards. One parent regarded screens as helpful because they kept the child in regular contact with relatives:

> Very often. But not regularly. For example, do you have a schedule once a week, or how many times a week, to call her grandmother, grandfather, or aunt? There is no special schedule. The schedule follows So I am free when...I think that's important, it's true that the screen is very helpful to call her grandmother, call her aunt, call her grandmother. *(P6, l.399–401)*

The fourth theme, technoference, refers to interference or interruption in mother-child interaction caused by the mother's use of technology in the child's presence. It has two subthemes: mothers' technology use and the child's response to the mother's screen time. Mothers' distracted behavior while using devices has been linked to lower sensitivity, fewer verbal interactions, and reduced responsiveness and attentiveness toward the child. Children, in turn, may notice and object to this behavior. One mother reported that her son asked her to put her phone away so that she would pay attention to him:

> He also will sometimes say to me, Mummy, no phone, no phone, because he wants me to concentrate on him and not the phone. So, wow. Yes..so, he tells me off if I am on it. *(P4, l.443)*

The fifth theme, the macrosystem, refers to the wider environmental structure in which an individual lives, including the cultural, political, and economic context. In this study, the macrosystem took the form of government digital policy. This theme emerged when parents referred to official guidance on children's screen use to justify their own rules. It shows that parents' screen-time decisions were shaped not only by their own beliefs and family routines but also by the policy environment in which they raised their children. One parent living in Australia explained that the local recommendation of no screen time for children aged 0 to 2 led the family to keep their child's screen time to a minimum:

> So we think, it is still real life, and he is still under-stimulated. Because, here (in Australia), they say that children aged 0 to 2 should not have screen time. So we really minimize screen time. *(P5, l.212)*

Taken together, these five themes show that parents did more than allow or forbid screen use. They selected content according to its purpose and their child's age, set and discussed rules with their children, and preferred formats that invited interaction. They also drew on government guidance to decide how much screen time was appropriate. At the same time, their own device use shaped how their children experienced screens, as the technoference theme shows.

Effects of Screen Time on Children's Language Development

The second objective was examined through three themes, each representing a language competency that marks children's language development: receptive language, expressive language, and vocabulary. Evidence for each competency came from two sources, namely observations of the children and parents' interview responses. The observations showed what the children could already do with language. At the same time, the interviews revealed how parents understood their children's progress and, in some cases, how they related it to the screen content their children used.

Receptive language refers to children's ability to comprehend language and process language

input from the environment. Observations showed that the children could correctly point to at least seven body parts, such as the nose, eyes, hair, feet, and ears, when asked. They could also follow two-step verbal instructions, such as "put the book on the table" and "put the shoe under the chair," without pointing or gestural cues. Their grasp of directional concepts differed. One girl consistently moved a zipper up or down in response to verbal instructions, whereas one boy did so only sometimes and was not consistently accurate across trials. Parents' accounts showed that comprehension was not always matched by the ability to express it. One parent explained that their daughter understood the situation and knew what she wanted but had limited capacity to say it, so she pointed and cried instead:

> So at this point, she already has desires, but she is unable to fulfill them. He has to use other people to fulfill them. That becomes frustrating. So it hinders how she expresses those desires. So, at that time, because of the frustration, she has a hard time expressing what he wants. For example, she just points. She doesn't speak. 'Because I want that, but I can't do it.' So she points, cries, maybe expresses anger. Or like she's on strike or something. Well, mostly she points and cries. She probably has a hard time expressing it. Even though I'm sure she has vocabulary. *(P6, l.136–148)*

Expressive language refers to children's ability to speak and engage in meaningful conversation. Observations showed that the children could produce three- to four-word sentences in a meaningful, appropriate context and, when viewing a picture book, describe the actions shown in the images, such as running, eating, barking, and crying. They differed in their ability to introduce themselves. The girl could sometimes state both her first and last names, while the boy could not yet say his full name. Parents' accounts added evidence of more advanced expression. One parent described how their son answered a simple question with a long, structured sentence:

> So I asked a question, and the answer was quite long. For example, 'Where are you going today.' He could answer a lot of things. Starting from where, who you were with, and what you were going to take or how you were going to get there. It was all in one sentence; if it was written down, it would be a paragraph. *(P5, l.16–18)*

This parent had earlier described the program their son watched as one that prompted him to speak and taught him songs. In the same interview, the parent noted that the presenter often asked the child to repeat words, such as "Can you say, mama?" This suggests that the parent saw carefully selected, interactive content, used within limited screen time, as supporting the child's expressive language.

Vocabulary refers to the words or phrases children recognize or memorize. Observations showed children at different stages of vocabulary growth. Children engaged actively with picture books by pointing to, touching, or trying to pick up images, and one child communicated her wants by pointing to the object she wanted. Some children could sometimes fetch a familiar object, such as a ball, coat, or blanket, from another room when asked, showing they recognized the names of familiar objects. Their spoken vocabulary ranged from four or more words to eight or more words, plus "Mama" or "Mommy" and "Dada" or "Papa." At the same time, one child could not yet

imitate two-word phrases, such as "mommy is eating" "papa is playing" "go home," or what's this"Parents' accounts showed that new words often appeared before children could articulate them accurately. The same parent described how their son referred to his favorite toy vehicles with approximations and sound words:

> Idon't know. Because he really likes toy cars, so he usually says, bus, like boh, boh. Sometimes he calls it car, sometimes he just says beep-beep. *(P5, l.184 & 190)*

Overall, parents saw the effect of screen time on their children's language as depending on the type of content and how screens were used. Content with real human interaction and prompts to speak was viewed as supporting children's speech. In contrast, fast-paced, overstimulating content was viewed as a potential hindrance. Observations and interviews also showed that children's comprehension tended to develop ahead of their ability to express themselves.

Discussion

The research found 5 themes related to screen time exposure on children based on parents' perspective, namely content (type of media child accessed), context (parent's role in ST), interactivity (parent-child interaction during digital media use), technoference (mother's technology use around children), and the role of the macrosystem (government's digital policy). Content, context, interactivity, and technoference are accordingly themes described in previous studies (Dore et al., 2024; Guellai et al., 2022; Krogh et al., 2021; Lo et al., 2024; Sticca et al., 2024; Xie et al., 2024). Despite the similar themes, this study's subthemes are derived specifically from interview evidence (see Figure 3 for a comprehensive pattern describing the research findings).

Subthemes derived from each theme have been analyzed in terms of their association with children's language skills. The type of content is a vital factor to be considered when examining the link to language development. Previous research suggests that educational program content is positively associated with the development of children's language skills (Bal et al., 2024; Dore et al., 2024; Jing et al., 2023; Madigan et al., 2020). Participants with good attention to digital literacy in this study suggest educational content with less color and motion stimulation, unlike full-color animated content. Jing et al. (2023) found in an experimental study of children aged 0-6 years that e-books with minimal color and motion stimulation have greater effects on children's word learning and vocabulary size. Contextual factors of screen time are among the most important aspects to be considered before ST is given to children, especially in the first 3 years of age. Xie et al. (2024) suggest that restricting screen time for young children, improving the quality of screen content and context, and ensuring children do not start using screens too early are important and beneficial for early language development.

This study suggests that parents' involvement in managing children's screen time plays a predominant role in ensuring positive effects on children's language development. Wu et al. (2026) suggest that parents can mitigate screens' negative effects on children and adolescents by monitoring screen use and improving screen-use skills. Technoference, one of this study's themes, appears to be a notable factor shaping dynamics among parents, children, and screens—Konca et al. (2025) found

that problematic parental screen use negatively affected children's screen use and the quality of parent-child relationships. Further, poorer parent–child relationships were associated with greater child screen time and fostered a tendency toward harsh parenting (Zhang, 2025).

Parental factors are empirically predominant in this study, as shown in Figure 3. Despite these parental factors, parental digital literacy is considered novel and notable evidence. This study found that parents' perspectives and knowledge shape their competence, which is expressed in behaviors such as supervising, giving contextual feedback, managing control, and implementing rules regarding children's ST. Bhoi et al. (2025) also found that technology-related parenting supports implementing rules and monitoring children's screen time; thus, it is associated with lower screen time among children. Parents with digital literacy tend to be more cautious and aware of their child's language developmental milestones. Afrillianti et al. (Afrillianti, K. R., Aisyah, I., Puspanditaning, 2026) concluded that parental assistance and direction regarding screen time are important for ensuring children's social interaction and language skills improve. Sessiani et al. (2025) found that digital parenting and literacy support children's language development, particularly language acquisition.

This study also offers a novel finding on the role of government concern and policy toward family dynamics, and thus its impact on digital parenting strategies for young children. Australian Department of Health issued national guidelines for screen time as follows: (1) infants younger than 2 have no screen time, (2) children aged 2-5 have no more than one hour per day, (3) children and young people aged between 5-17 years have less than 2 hours a day of sedentary recreational screen time (NSW Government Digital Citizenship, 2026). This regulation is socialized and strictly monitored; parents even participate in surveillance interviews at public health community services. In Indonesia, there are no specific regulations, only recommendations from the Pediatric Society, with no clear monitoring process. This evidence suggests an urgent need to improve digital literacy to establish more sustainable digital citizenship.

Conclusion

This study found a pattern linking screen time to child language development. Parents' literacy and involvement in children's daily screen activity are essential to support language development across receptive, expressive, and vocabulary skills. Parents are encouraged to avoid leaving children unsupervised with screens and to be consistent with rules about the amount and content of screen time. Using media with children (co-using, co-viewing) is strongly recommended to help children understand the context and content on screens and build knowledge and meaning related to their own lives in the future.

Several limitations are acknowledged in this study: although high-quality digital media may support language acquisition and comprehension skills, ensuring supervised screen time remains difficult. Despite using multipleple approaches (interviews and observations), this study needs more evaluation to be considered mixed-methods study, since the observations were indirect/non-participant. Sample selection in Indonesia and Australia is relatively limited; therefore, it should consider a

wider variation of demographic characteristics, such as rural vs. urban areas, parents' socio-economic status, and children's birth order.

Future studies should focus on developing effective methods to reduce and maintain low and effective screen time in children. Research that clarifies the accuracy and utility of specific time-based limits on children's media use will clarify any links between media use quantity and language development and inform guidelines for families. Randomized controlled trials or quasi-experimental longitudinal designs would enable repeated measurements of digital media use and language development, allowing more relevant covariates to better isolate the unique relationship between media use and language development. Cross-sectional or cross-cultural studies can also be implemented to gain a broader perspective on more variables and factors influencing language development in children, to help prevent the risk of speech delay and other forms of developmental delay.

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Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Generative AI Statement

The authors used Grammarly solely for language editing and proofreading to improve the clarity and readability of the manuscript. All AI-assisted output was critically reviewed and revised by the authors, who take full responsibility for the accuracy, integrity, and final content of the manuscript.

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