



Original Article

Association Between Excessive Screen Time and Language Delay in Preschool Children

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ABSTRACT

Background: Language is a fundamental medium for expression and comprehension of complex ideas and is acquired from early childhood through both receptive and expressive forms, such as spoken words or sign language. The initial years of life are critical for language development, and the rise of digital device usage during this period prompts an investigation into its potential impact.

Objective: This study aims to explore the connection between excessive screen time and language delay in preschool children, a subject of increasing relevance in the digital age.

Methods: A cross-sectional approach was taken, gathering data from the caregivers of 318 preschool children in Lahore, using the Ages and Stages Questionnaires-3 (ASQ-3) to measure developmental milestones. SPSS version 23 was employed for statistical analysis.

Results: The study included 318 participants, with a gender distribution of 218 females (68.6%) and 100 males (31.4%). In terms of device usage, 209 children (65.7%) used mobile phones, while 91 (28.6%) watched television, and 18 (5.7%) played video games. Regarding screen time duration, 65 children (20.4%) used devices for 1-3 hours, 105 (33.0%) for 3-6 hours, 113 (35.5%) for 6-9 hours, and 35 (11.0%) for more than 9 hours. Notably, for children with over 9 hours of screen time, only 27% met their language developmental milestones at 33 months, which reduced with age, culminating in just 20.1% meeting milestones by 60 months.

Conclusion: The study's findings suggest a significant negative correlation between excessive screen time and language development in preschool children, with a clear trend of decreasing milestone achievement with increased screen time. This highlights the need for strategic interventions to manage screen time in early childhood.

Keywords: language development, screen time, preschool, developmental milestones, digital media.

INTRODUCTION

Language is an essential tool for expressing and understanding thoughts, ideas, emotions, and information. It encompasses both receptive and expressive communication, manifesting in forms such as spoken language or visual forms like American Sign Language (ASL) (1). As a set of socially agreed-upon codes, it comprises a vast array of symbols governed by specific rules. This linguistic framework not only reflects the thought processes of a culture but also shapes them (2).

From infancy, children absorb language through their interactions with the environment. This learning process is active, involving both first and second language acquisition. Language comprehension is complex, requiring the ability to process speech sounds, link them to a mental lexicon, and understand grammar and word sequences. However, it's crucial to apply the findings from adult comprehension research to children with caution, considering their unique developmental contexts (4).

Infants initially communicate primarily through crying. Gradually, they begin to recognize familiar voices and express various needs through different cries and vocalizations. This early stage of language development is marked by significant milestones, such as babbling, recognizing basic words, and eventually forming simple



sentences (5). As children grow, they become more proficient in language development, demonstrating a remarkable ability to acquire new words and forming complex sentences (6-9).

This study focuses on the prevalence of language delays in relation to screen time. Excessive screen time, defined as engagement in activities involving TVs, computers, or other digital devices, has been linked to language development issues (15). Other contributing factors to language delays include hearing issues, neurological disorders, and environmental influences.

The objective of this study is to explore the association between excessive screen time and language development delays in preschool children. The methodology includes observational and survey methods targeting children aged 1 to 5 years from various backgrounds. This approach aims to provide a comprehensive understanding of how screen exposure impacts language acquisition during critical developmental stages (16-17).

In conclusion, this study emphasizes the importance of utilizing screens and interactive activities to promote language development. It aims to provide insights for mitigating the risks associated with excessive screen exposure in early childhood, highlighting the need for awareness and appropriate interventions in the digital age.

MATERIAL AND METHODS

In this cross-sectional study, data were collected from the parents of preschool children residing in Lahore. The study focused on typically developing children aged between 2.5 and 5 years. Any child with a congenital or acquired disability was excluded to maintain the study's focus on typical developmental patterns.

The primary tool used for data collection was the Ages and Stages Questionnaires-3 (ASQ-3). This instrument is designed to measure five key developmental domains: communication, gross motor skills, fine motor skills, problem-solving abilities, and personal-social skills. The ASQ-3 is widely recognized for its effectiveness in assessing the developmental performance of preschool-aged children.

The parents of the children were requested to fill out the ASQ-3 questionnaires, providing comprehensive information on each child's development across the domains. This approach ensured that the data reflected a broad spectrum of developmental milestones and capabilities relevant to preschool-aged children.

Upon collection, the data were meticulously recorded and subsequently analysed using SPSS version 23. This statistical software was chosen for its robustness and capability to handle complex data sets, allowing for a thorough and detailed analysis of the developmental trends observed in the study participants.

This methodological approach adhered to standardized guidelines for research in child development, ensuring the reliability and validity of the findings. By maintaining a focus on a well-defined age group and utilizing a recognized developmental assessment tool, the study aimed to provide meaningful insights into the impact of various factors on early childhood development.

RESULTS

In this study involving 318 participants, the gender distribution showed a higher proportion of females (218 participants, 68.6%) compared to males (100 participants, 31.4%). Regarding device usage, mobile phones were the most commonly used device among the children, with 209 participants (65.7%) using them. Televisions were the next most popular, used by 91 participants (28.6%), followed by video games used by 18 children (5.7%). No participants reported using other types of devices. In terms of device usage duration, a significant number of children (113, 35.5%) used devices for 6-9 hours, followed by 105 children (33.0%) using them for 3-6 hours. A smaller group of 65 children (20.4%) used devices for 1-3 hours, and 35 children (11.0%) used them for more than 9 hours.

Table 1 Summary of Study Participant Characteristics and Device Usage

Characteristic	Subcategory	Frequency (n=318)	Percentage (%)
Gender	Female	218	68.6
	Male	100	31.4
Devices Used	Mobile Phone	209	65.7
	TV	91	28.6



Characteristic	Subcategory	Frequency (n=318)	Percentage (%)
	Video Game	18	5.7
	Other Device	0	0.0
Device Usage Duration	1-3 hrs.	65	20.4
	3-6 hrs.	105	33.0
	6-9 hrs.	113	35.5
	>9 hrs.	35	11.0

The study assessed sentence-making abilities in children aged 33 to 60 months in relation to their device usage. At 33 months, 16 parents reported their children could make sentences, 27 sometimes, and 12 not yet, with 25.5% using devices for more than 9 hours. For 36-month-old children, 14 parents reported 'Yes', 21 'Sometimes', and 15 'Not Yet', with 34.5% of these children using devices for more than 9 hours.

Table 2 Sentence-Making Abilities and Device Usage in Children Aged 33 to 60 Months

Age (Months)	Sentence Making Ability	Yes	Sometimes	Not Yet	Device Usage (>9 hrs) - Yes (%)	Device Usage (>9 hrs) - Sometimes (%)	Device Usage (>9 hrs) - Not Yet (%)
33	Response Frequency	16	27	12	25.5	41.1	33.3
36	Response Frequency	14	21	15	34.5	37.1	28.8
42					32.1	37.1	30.8
48					25.1	37.1	37.8
54					25.1	24.8	50.1
60					20.1	24.8	70.1

As age increased, the percentage of children not yet making sentences who used devices for more than 9 hours also increased: 30.8% at 42 months, 37.8% at 48 months, 50.1% at 54 months, and 70.1% at 60 months. Simultaneously, the percentage of children who could make sentences decreased with age for those using devices extensively.

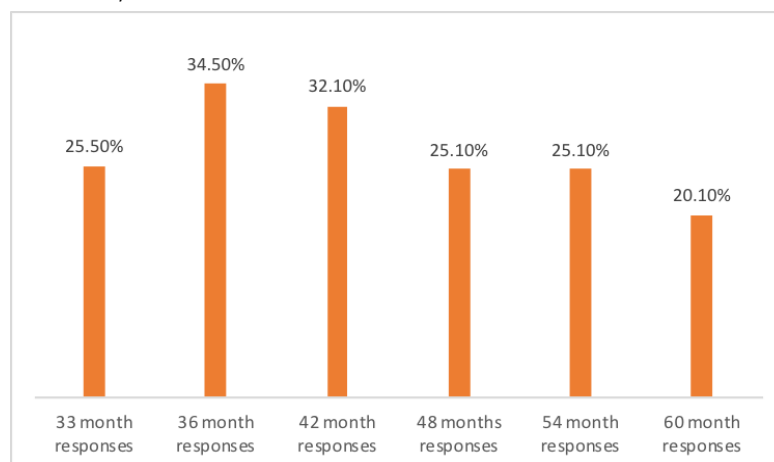


Figure 1 Association Between Excessive Screen Time and Language Development

There was a decline to 20.1% for children at 60 months, suggesting a decrease in the proportion of children using devices extensively as they approached five years of age.

DISCUSSION

In contemporary society, screens from televisions to mobile devices are ubiquitous and easily accessible, often utilized by parents to engage their children. Language development in young children, a process which unfolds continuously from birth through the first five years, is recognized as a particularly sensitive period. It is during this

The bar chart illustrates the percentage of children at different ages who are reported to use devices for more than 9 hours. At 33 months, 25.5% of children were reported to engage in this level of device usage. The percentage increased to 34.5% for children at 36 months, indicating a rise in high device usage as age increased. However, at 42 months, the percentage slightly decreased to 32.1%. For children at 48 and 54 months, the percentage remained consistent at 25.1%. Notably, there

was a decline to 20.1% for children at 60 months, suggesting a decrease in the proportion of children using devices extensively as they approached five years of age.



critical epoch that the foundation for language acquisition is established. The present study sought to examine the ramifications of excessive screen time on this pivotal developmental phase, specifically investigating its association with language delays in preschool-aged children (18).

The findings corroborate existing literature indicating that prolonged exposure to screen time may not universally impede developmental milestones in language. Previous investigations have reported a similar association between screen time and language development, suggesting that while some children who engage with screens extensively do meet developmental benchmarks, a substantial proportion do not (19-20). The implication is that excessive screen time may have a heterogeneous effect, facilitating development in some while hindering it in others, potentially due to varying environmental or individual factors that were not controlled for in this study.

The study sample, comprised of a majority of female participants, indicated a predominant use of mobile phones over other devices such as video games. Within this cohort, a significant pattern emerged: a marked percentage of children who were exposed to screens for over nine hours demonstrated a delay in meeting language milestones. This observation echoes the findings of the Hanen Centre and reinforces the conclusions drawn by Lee I, who posited that screen time negatively impacts children's expressive language skills, potentially leading to communicative deficits when compared to their peers (21).

CONCLUSION

The prevalence of screen time in the lives of children today is incontrovertible, and the current findings suggest that its excessive use may impede language development. Parents reported that a minority of children who engaged with mobile devices for extended periods achieved age-appropriate developmental tasks. This reveals a concerning negative correlation between screen time and language development, indicating that increased screen exposure may lead to developmental lag.

The implications of these findings are multifaceted, underscoring the need for awareness and intervention strategies. Parents, educators, and policymakers must recognize the potential drawbacks of excessive screen time and be proactive in establishing guidelines that limit screen exposure. Early childhood programs should advocate for and support language-rich environments that encourage direct human interaction over passive screen engagement. Moreover, the results of this study serve as a catalyst for future research to further explore the individual differences that may moderate the impact of screen time on language development, ensuring that young children have the opportunity to achieve their full communicative potential.

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