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# The Relationship of Screen Time to the Incidence of Speech Delay in Children Aged 2-5 Years

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**Abstract:** This study analyzes the relationship between screen time and the incidence of speech delay in children aged 2-5 years. The Alpha generation, which was born in 2010, is known as a smart generation because it grew up in the era of technology and the internet. However, excessive use of screen time can reduce social interaction and interfere with children's speech development. The method used was descriptive quantitative with a cross sectional approach, involving 60 respondents who were selected through purposive sampling and measured using questionnaires. The results showed that 19 respondents (52.8%) with high screen time intensity experienced speech delay, while 9 respondents (50.0%) with moderate intensity and 5 respondents (83.3%) with low intensity also experienced the same. The hypothesis test using Kendall's tau c yielded a p-value of 0.461 ($p > 0.05$), indicating no significant association between screen time and speech delay events. The conclusion of this study confirms that screen time does not have a significant effect on children's speech development in the region.

**Keywords:** Child; Screen Time; Speech Delay

## Introduction

According to Law No. 20 of 2003 concerning the National Education System, early childhood is a child in the age range of 0-5 years. Early childhood development is also referred to as the golden period (Priyoambodo & Suminar, 2021). The toddler period is a developmental phase experienced by children from birth to the age of 2 years where children will experience an increase in cells from the organs of the body, children also experience development from an early age, namely speaking, language, social, gross motor as well as fine motor if a toddler who has a lack of stimulus can cause disorders, one of which is speech and language problems are also often called *speech* or speech delay in children (Mahmudianati et al., 2023).

*Speech delay* is a problem in speech and language sluggishness in children that causes parents to be worried about their child's condition because of development that is not in accordance with the development of their peers (Mahmudianati et al., 2023). Language and speech disorders in childhood can cause obstacles in their academics and social, which can potentially have consequences during life on educational and work outcomes. Most speech disorders resolve by the end of school, with between 2-5% suggesting speech disorders can continue into adolescence and even adulthood (Yulinawati et al., 2024).

According to Nelson, based on research in the United States, 5% – 8% of children aged 4.5 years have a delay in speaking with a prevalence of 2.3% to 19% (Fatimah et al., 2024). The incidence of development delays in the United States ranges from 12-16%, Thailand 24%, and Argentina 22% while in Indonesia it is 13%-18% (Nurhikmah et al., 2023). In Indonesia, prevalence *speech delay* in preschool children it is 5%-10%. According to national data according to the Indonesian Ministry of Health, in 2010 11.5% of children under five in Indonesia had growth and developmental abnormalities (Nurhikmah et al., 2023). According to the Indonesian Pediatrician Association (IDAI), the 2023 prevalence data *speech delay* in preschool-age children in Indonesia there are 5-8%. This means that about 5-8 out of 100 preschool-age children in Indonesia have speech delays. The latest data from the study of Mardiah and

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Ismet (2021) shows that the prevalence of *speech delay* in preschool-age children in Indonesia reached 42.5%. This figure is much higher than the prevalence reported by IDAI (Ministry of Health, 2023). According to (Yulianda, 2019) states that the factors that cause children to experience *speech delay* Among them are internal factors and external factors. Internal factors that can affect children *speech delay* are genetic, physical disability, neuroligic malfunction, prematurity, and gender. Which affects the child to experience *speech delay* in terms of external factors, namely, economic status, family functions, *Bilingual* Mother's Education (Aurelia et al., 2022).

Maternal education is very important, especially in the golden age of children, namely at an early age, namely at the age of 0-5 years. Parents must be smart in educating and guiding their children, especially in the use of digital devices, because the services provided by digital devices do not always have a positive impact on children but also have a lot of negative impacts (Zudeta et al., 2023). Data shown by the Central Statistics Agency (BPS) at the end of 2020 as many as 20.1% of preschool-age children have accessed the internet (Haura et al., 2022). In 2022, BPS showed data, the number of incidents of use *Gadgets* for children from 0 to 4 years old, which is 25.5%. The incidence of internet access use of children aged 0 to 4 years is 18.79% (Alifa Mardhatillah et al., 2024). One of the things that causes children to experience developmental delays is *Screen Time* (Liu et al., 2021).

*Screen time* is the length of screen use *(screen)* electronic media such as *Gadgets* laptops, and tablets (WHO, 2020). Many studies have stated adverse effects *Screen Time* on early childhood development, one of which is language development (Aprilia & Thaib, 2024). *Screen time* on children has a positive impact and a negative impact. Benefit *Screen Time* in children, that is, encouraging creative expression and critical thinking in children without limiting them to real-world boundaries. Negative impact of *Screen Time* more than the positive impacts, namely dependence, lack of concentration, radiation exposure and speech delay. The biggest negative impact of use *Gadgets* in children where children spend their time just playing *Gadgets* So that they tend to be lazy to move and do activities that can interfere with gross motor skills, Toddlers who spend excessive time on digital devices may gradually forget the joy of playing with their peers. This condition can lead to reduced opportunities for **direct interpersonal communication** and **collaborative cooperation** during play activities. As a result, children's social interaction skills may become disrupted, affecting their ability to build healthy relationships with others (Oktafia et al., 2022).

## Method

The type of research used in this study is descriptive quantitative research with observational analytical methodology. Data were analyzed in this study using *a cross sectional* approach procedure.The *cross sectional* approach allows researchers to make observations or measurements of variables at a specific time on the subject without following up on the measurements (Adiputra et al., 2021). The population in this study is 151 children aged 2-5 years in Mekar Sari Narmada Village, West Lombok. With a sample of 60 children. The data collection instruments used were the questionnaire on the intensity of *gadget use* and the KPSP questionnaire (Pre-Screening Developmental Questionnaire). Data processing was assisted by the SPSS 27 application using univariate and bivariate analysis, as well as kendall's tau c test.

## Result and Discussion

This research was conducted in Mekar Sari Village, Narmada District, West Lombok Regency, this village is divided into several hamlets, including: Karang Kates Hamlet, Kebon Belek Hamlet, Tempit Hamlet, Pemangket Hamlet, Karang Luah Hamlet, Nyangget Hamlet. The village is located between: East Sebalah: bordering Dasan Tereng Village and more precisely next to the Narmada Health Center UPTD. West: adjacent to Sembung Village. To the south: bordering Badraina Village. North: bordering the village of Gerimak Indah. From the results of the research that has been carried out, the distribution of the frequency of respondents based on age

**Table 1.** Distribution of Frequency of Respondents by Age at KPSP in Mekar Sari Village, Narmada District, West Lombok

| Child's age | Frequency | Percentage % |
|---|---|---|
| 24-<30 | 5 | 8.3 |
| 30-<36 | 5 | 8.3 |
| 36-<48 | 16 | 26.7 |
| 48-<52 | 8 | 13.3 |
| 52-<60 | 15 | 25.0 |
| 60 | 11 | 18.3 |
| Total | 60 | 100.0 |

Based on Table 1, it can be seen that the largest proportion of respondents falls within the age group of 36–<48 months, with a total of 16 respondents (26.7%). This finding suggests that more than a quarter of the study population is concentrated in this age range. The predominance of respondents in this category provides

important information regarding developmental characteristics that may influence the outcomes measured in the study. Therefore, the age distribution should be taken into account when interpreting the overall results, particularly in relation to developmental and health-related variables.

**Table 2.** Distribution of Respondent Frequencies by Child Sex in Mekar Sari Village, Narmada District, West Lombok

| | Frequency | Percentage (%) |
|---|---|---|
| Male | 30 | 50.0 |
| Woman | 30 | 50.0 |
| Total | 60 | 100.0 |

Based on Table 2, it is shown that the number of male and female respondents in this study is equal, with each group consisting of 30 respondents (50.0%). This finding demonstrates that the composition of respondents is proportionally distributed according to sex, providing a balanced representation between male and female participants. A proportional distribution such as this is important in research because it ensures that both groups are fairly included in the study population (Insoll et al., 2022; Rozelle et al., 2023; Pankowiak et al., 2023).

This balanced gender distribution also indicates that the data collected can minimize the possibility of bias caused by unequal representation of sexes. When one gender is overrepresented, the results may be skewed and not fully reflective of the entire population. Therefore, equality between male and female respondents helps strengthen the credibility and reliability of the research findings, particularly in studies related to health, education, or social behavior where gender may influence outcomes. Furthermore, having an equal number of male and female respondents allows for a more comprehensive interpretation of the results. It enables comparisons between genders to be made more accurately, as both groups contribute equally to the dataset. Thus, the findings of this study can be interpreted more objectively without being significantly influenced by gender imbalance, making them more generalizable to similar populations in other contexts.

**Table 3.** Characteristics Based on the Education Level of the Respondent's parents (mother) in Mekarsari Village, Narmada District, West Lombok

| Parent's (mother's) level of education | Frequency | Percentage % |
|---|---|---|
| SMA | 19 | 31.7 |
| JUNIOR | 19 | 48.3 |
| SD | 12 | 20.0 |
| Total | 60 | 100.0 |

Based on Table 3, it can be seen that the majority of respondents' parents had their last education at the junior high school level, with a total of 29 respondents (48.3%). Meanwhile, the number of parents, particularly mothers, whose last education was at the high school level amounted to 19 respondents (31.7%). This distribution indicates that most parents of the respondents have a relatively moderate educational background. Such variations in parental education may play a role in shaping the knowledge, attitudes, and support systems available to the respondents, particularly in relation to health education and awareness (Dragin et al., 2022).

**Table 4.** Characteristics Based on the Work of Respondents' Parents (Mothers) in Mekar Sari Village, Narmada District, West Lombok

| The Work of the Know-Who (Mother) | Frequency | Percentage (%) |
|---|---|---|
| IRT | 40 | 66.7 |
| Merchant | 10 | 16.7 |
| Salesperson | 8 | 13.3 |
| Village apparatus | 1 | 1.7 |
| Self employed | 1 | 1.7 |
| Total | 60 | 100.0 |

Based on Table 4, it shows that most of the respondents' parents do not work, with the majority being housewives, totaling 40 respondents (66.7%). This finding illustrates that a significant proportion of mothers devote their time to domestic roles rather than formal employment. Such conditions may influence the socio-economic dynamics of the family, including access to health information and educational support for their children. Therefore, the occupational status of parents becomes an important contextual factor to consider in interpreting the overall results of this study (Rajgariah et al., 2023).

**Table 5.** Distribution of *Screen Time Frequencies* in Children in Mekar Sari Village, Narmada District, West Lombok

| Intensity *of screen time* | Frequency | Percentage (%) |
|---|---|---|
| Low | 6 | 10.0 |
| Keep | 18 | 30.0 |
| Tall | 36 | 60.0 |
| Total | 60 | 100.0 |

Based on Table 5, the average child in Mekar Sari Village experiences moderate to high screen time intensity. The majority of respondents, totaling 36 children (60.0%), were categorized as having high screen

time. This condition highlights the significant use of digital devices among children, which may influence their health, social interactions, and developmental progress (McArthur et al., 2022; Amaral et al., 2023).

**Table 6.** Distribution of Children's *Speech Delay* Frequencies in Mekar Sari Village, Narmada District, West Lombok

| Speech Delay | Frequency | Percentage % |
|---|---|---|
| Usual | 27 | 45.0 |
| Late | 33 | 55.0 |
| Total | 60 | 100.0 |

Based on Table 6, it shows that more than half of the children in Mekar Sari Village experience delayed speech and language development, totaling 33 respondents (55.0%). This finding suggests that speech delay is a significant issue affecting the majority of children in the study population ( Ariani et al., 2021; Gohsman et al., 2023; Cox et al., 2023). The high prevalence of delayed speech and language development may be associated with several contributing factors, such as screen time intensity, parental involvement, and environmental stimulation. Therefore, this result highlights the importance of early intervention and parental awareness in supporting optimal language development among children in the community (Dawson et al., 2021; Herzberg et al., 2022; Calder et al., 2022).

**Table 7**. Results of Kendall's Tau Screen *Time* Test with Speech *Delay* Incident in Mekar Sari Village, Narmada District, West Lombok

| ***Screen Time*** | **Occurrence *of Speech Delay*** | | | | | | **P Value** |
|---|---|---|---|---|---|---|---|
| | **Usual** | | **Late** | | **Total** | | |
| | **N** | **%** | **N** | **%** | **N** | **%** | |
| Low | 1 | 16.7 | 5 | 83.3 | 6 | 100.0 | |
| Keep | 9 | 50.0 | 9 | 50.0 | 18 | 100.0 | 0.461 |
| Tall | 17 | 47.2 | 19 | 52.8 | 36 | 100.0 | |
| Total | 27 | 45.0 | 33 | 55.0 | 60 | 100.0 | |

Based on Table 7, it was found that with various *screen time intensities, the* majority of respondents experienced *speech delays* as many as 19 respondents (52.8%) with high *screen time* intensity. Children who experienced *speech delay* with moderate *screen time* intensity were 9 respondents (50.0%). Children who experienced *speech delay* with low *screen time* intensity were 5 respondents (83.3%). The results showed that the majority of respondents were 36-<48 months old (3 years – <4 years) and were preschoolers. The age grouping of respondents was adjusted to the age of the KPSP used for the research. In this study, the 42-month-old KPSP was not used because there was no speech and language aspect, so there was an age range of 12 months at the age of 36 months to 48 months (Chong et al., 2022).

The age of 36-<48 is the age of children who are also pre-school age. At this age, children have a high curiosity about things, expressing a variety of dynamic emotions ranging from joy, whining to tantrums. During this time, parents have an important role to choose the right activities, so that toddlers can develop their potential to be more optimal. The preschool period has an important role in preparing them for the preschool stage (Mansur, 2019). From the results of the study, the number of male and female respondents was the same as 30 female respondents and 30 male respondents (50.0%). The difference in brain maturation of boys and girls naturally affects the speed of language and speech development. The results of the study show that most of the respondents' parents' (mothers) are junior high school as many as 29 respondents (48.3%). High parental (mother) education will influence the mother's decision in terms of educating and caring for her child. Mothers whose education is more open-minded and easier to receive new sources of information and can filter this information, easily change behavior, and can make the right decisions in providing education for their children and conversely, the lower the level of education the mother, the less knowledge the mother has about the child's speech and language development ( Dewi et al., 2023; Al Hosani et al., 2023).

The results showed that most of the respondents' parents did not work (housewives) as many as 40 respondents (66.7%). Parents who work as many as 10 respondents (16.7%) as traders, 8 respondents (13.3%) as salespeople. Generally, working can take up time to meet the economic needs of the family, so that the time that parents (mothers) have to meet their children is reduced, while mothers who do not work (housewives) will have more free time so that they can better know, supervise, and pay attention to each activity of their toddlers. People who know (mothers) who do not work more often invite children to interact (Tambunan et al., 2024). The questionnaire about the intensity of *gadget* use consists of 3 questions, namely about weekly frequency, daily frequency, and

duration. The level *of screen time* is affected by the frequency and also the duration or length of use interact (Syafrina, 2022; Yunita et al., 2023; Astari& Ismet, 2025).

The results of the data tabulation showed that the most *gadget use*/week was 7 times/week (every day) with 56 respondents (93.3%). In the most *gadget usage*/day at 1-3 times/day, as many as 41 respondents (68.3%). At the level of the most *gadget use* duration at the duration of >60 minutes, 37 respondents (61.7%). The more often and for longer the child interacts with *gadgets*, the more dependent the child will be on *gadgets* if left continuously, the child will be difficult to control and result in *screen time addiction* in children. Too often exposure to *screen time* can cause an addiction called *screen dependency disorder* (SDD) or dependence disorder on gadget screens (Paradevi, 2020). In this study was carried out on 60 respondents, the results of the study were found that more than half of the children in Mekar Sari Village had delays in speech and language development, namely 33 respondents or 55.0%. Respondents who had normal speech and language development were 27 respondents or 45.0% (Putra et al., 2022; Letts et al., 2023; Nadiradze et al., 2024).

This study was conducted on 60 respondents regarding low, medium, and high intensity screen time. The majority of children in Mekar Sari Village regarding *high-intensity screen time* as many as 19 respondents or 52.8% and are included in children who experience delays in speech and language development. The results of the statistical test using *kendall's tau* obtained a value of p = 0.090. The results of this data analysis showed that the value of p >0.05 which means that there was no significant relationship between screen *time* and the occurrence of *speech delay* in Mekar Sari Village, Narmada District, West Lombok . ( Muntz et al., 2022).

## Conclusion

The conclusions of this study include: Most of the children in Mekarsari village have *high intensity* screen time. Almost half of respondents experienced *speech delays* There is no significant relationship between *screen time* and *speech delay* in Mekar Sari Village, Narmada District, West LombokChildren's language and speech development will continue to develop even though the intensity of *screen time* is high.

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The authors declare no conflict of interest.

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