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Parental Education and Gadget Knowledge: Their Impact on Gadget Use Behavior in Children Aged 5-6 Years

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Abstract
This study investigates the relationship between parental education levels, gadget knowledge, and the gadget use behavior of children aged 5-6 years. Using a quantitative correlational research methodology, data were collected via a structured questionnaire from 168 parents across Indonesia. The questionnaire assessed parental education, knowledge of gadget use, and children's gadget use behavior. Results showed no significant correlation between parents' education levels and children's gadget use behavior. However, a low positive correlation was identified between parents' gadget knowledge and children's gadget use behavior. This suggests that parents with higher gadget knowledge can more effectively manage their children's gadget use. This finding underscores the importance of enhancing parental understanding of digital technology to foster healthier gadget use among young children. Limitations of the study include reliance on self-reported data and a predominantly maternal sample, which may only partially represent the broader population. Additionally, the cross-sectional nature of the study limits the ability to conclude long-term effects. Future research should involve more diverse samples, consider additional variables such as socio-economic status and cultural factors, and employ longitudinal designs to explore the long-term impacts of parental gadget knowledge on children's development. These steps are essential to gain a more comprehensive understanding of the factors influencing children's gadget use behavior and to inform strategies aimed at promoting healthier digital habits among young children.

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Introduction

The integration of technology into daily life has brought significant changes to family dynamics, particularly in the ways parents manage their children's activities. The advent of gadgets has proven beneficial, aiding parents in keeping children occupied and calm, thus serving as virtual companions for young children (Shin, 2014). This phenomenon has raised concerns about the implications of gadget use on the behavior and development of children, especially those in the critical developmental stage of 5-6 years. This age group, known as the golden age, is crucial for physical, cognitive, and social-emotional growth (Trisnawati, 2021). As such, understanding the role of parental education and knowledge regarding gadget use becomes imperative in addressing the potential impacts on children's behavior. Additionally, the increasing prevalence of technology in children's lives necessitates a closer examination of how these tools influence developmental milestones and behavioral patterns, setting a foundation for future educational and parenting strategies.

Existing literature highlights the dual role of gadgets as both educational tools and sources of entertainment, which can have diverse effects on children's development (Puji in Hijriyani & Astuti, 2020). Parents often resort to gadgets to keep children occupied, thus allowing

themselves to manage work and other responsibilities (Tibo & Ginting, 2020). However, this practice may lead to children viewing gadgets as their primary source of engagement, potentially affecting their social interactions and cognitive development (Maulana et al., 2021). The role of parents in early childhood education is underscored as they are the first educators in a child's life, responsible for guiding their development through various stages (Hidaya et al., 2019). Furthermore, the nature of gadget interaction—whether educational or purely for entertainment—plays a crucial role in shaping cognitive and social outcomes, highlighting the need for informed parental guidance in regulating such activities. This dual aspect underscores the importance of parental oversight in mitigating adverse effects while maximizing the benefits of gadget use.

The COVID-19 pandemic has further exacerbated the reliance on gadgets, with many parents turning to these devices to facilitate online learning (Joseph et al., 2022). This shift has highlighted the necessity for parents to possess adequate knowledge about appropriate gadget use to mitigate negative effects on children's development (Gamirova et al., 2021). Studies suggest that parents' educational background significantly influences their ability to manage their children's gadget use effectively (Retnaningsih, 2016). The intersection of parental education and the knowledge of gadget use thus emerges as a critical area of study in understanding its impact on children's behavior (Alam et al., 2020). In addition to managing screen time, parents' educational levels influence how they utilize gadgets to enhance learning and social skills, which can have long-term effects on children's overall development. The pandemic has underscored the need for a nuanced understanding of these dynamics.

Despite the recognized benefits of gadgets, such as enhanced learning opportunities and improved cognitive skills, there are notable risks associated with excessive use (Handrianto in Marpaung, 2018). Prolonged gadget use can lead to issues such as reduced concentration, impaired social skills, and health problems, which necessitate careful regulation by parents (Marpaung, 2018). The disparity in parental approaches to gadget management based on their educational level points to a significant gap in ensuring optimal child development (Rahmawati, 2020). Furthermore, the behavioral tendencies of children using gadgets, influenced by their parents' knowledge and educational background, remain an area warranting thorough investigation (Sumarni et al., 2019). Addressing these disparities involves not only educating parents about the risks and benefits of gadget use but also developing structured guidelines that align with children's developmental needs. This careful balance is essential for fostering a healthy developmental environment.

Several studies have addressed the behavioral aspects of children in relation to gadget use, identifying both positive and negative outcomes (Widya, 2020). However, there needs to be more literature regarding the specific influence of parental education and knowledge on children's behavior. Previous research has often overlooked how these factors interplay to shape the way children interact with gadgets (Setiawati et al., 2019). Controversies also exist about the extent to which gadgets should be integrated into early childhood activities, reflecting the need for a balanced approach that considers both educational and recreational uses (Schriever, 2017). The existing body of work underscores the importance of contextual factors, such as parental involvement and socioeconomic status, in moderating the effects of gadget use on children. These nuances are critical in forming comprehensive guidelines for parents and educators.

Despite the breadth of research on gadget use and child development, several limitations and controversies persist. One significant gap is the limited focus on how parental education specifically influences children's gadget use and behavior. Many studies have primarily addressed the general outcomes of gadget use without delving into the nuanced impacts of parental knowledge and educational background (Setiawati et al., 2019). Additionally, there are conflicting views on the optimal amount and type of gadget use for children, with some advocating for minimal exposure. In contrast, others suggest that structured, educational use can be beneficial (Schriever, 2017). These inconsistencies highlight the need for more targeted research to develop clearer guidelines and recommendations. Furthermore, the long-term

impacts of early gadget use on children's behavioral and cognitive development remain underexplored.

This study aims to bridge these gaps by examining the correlation between parents' educational levels and their knowledge about gadget use and the behavioral patterns of children aged 5-6 years. The research will contribute to a deeper understanding of how parental factors influence children's interactions with gadgets and provide insights into effective strategies for managing gadget use in early childhood. By identifying these relationships, the study seeks to inform educational practices and parental guidance to optimize the developmental benefits of technology while mitigating its risks. Moreover, the findings are expected to offer practical recommendations for educators and policymakers to support families in creating conducive environments for children's healthy development amidst the growing presence of technology in everyday life. This research holds the potential to advance the field of early childhood education and parental guidance, promoting holistic development in the digital age.

Methods

This study employed a quantitative research methodology to investigate the relationship between the education level and gadget knowledge of parents and the behavior of children aged 5-6 years who use gadgets. Data were collected from parents across Indonesia using a random sampling technique and a structured questionnaire developed with Google Forms and disseminated via social media platforms such as WhatsApp, Facebook, and Instagram. The questionnaire assessed parents' education levels and knowledge of gadget use, including appropriate applications for children, child protection apps, positive and negative effects of gadgets, and regulations on gadget use for children. Child behavior was measured in terms of observable social, moral, and language behaviors using a Likert scale. A pilot test on a sample with similar characteristics to the study population ensured the instrument's suitability, with responses analyzed for empirical and criterion validation (Arikunto in Ridwan, 2013). The final data were analyzed using quantitative statistical methods to test the hypotheses regarding the relationship between parents' education levels and gadget knowledge and the behaviors of their children using gadgets (Sugiyono, 2007, p. 14). The rigorous validation process confirmed the instrument's reliability and validity, ensuring accurate measurement of the constructs. This methodological approach aimed to provide robust findings on the interplay between parental factors and child behavior in the context of gadget use (Purwanto in Pradevi, 2019).

Result

This study aims to bridge the gap by examining the correlation between parents' education levels and their knowledge about gadget usage, as well as the behavioral patterns of children aged 5-6 years. This research is expected to provide a deeper understanding of how parental factors influence children's interactions with gadgets and offer insights into effective strategies for managing gadget use in early childhood.

As part of the data collection process, instruments in the form of Google Forms were distributed via social media platforms such as WhatsApp, Facebook, and Instagram. Through these dissemination efforts, 168 respondents from various regions were obtained. The data collected from these respondents will be analyzed to identify the correlation between parents' education levels and their knowledge regarding gadget usage and its impact on the behavior of young children.

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3.1. Respondent Characteristics

Table 1. Respondent Characteristics

No	Description	Count	Percentage
1	Status		
	Mother	145	89%
	Father	23	11%
2	Education		
	Elementary School (SD)	14	8.3%
	Junior High School (SMP)	13	7.7%
	High School (SMA)	38	22.6%
	Diploma	17	10.1%
	Bachelor's Degree (Sarjana)	77	45.8%
	Postgraduate (Pasca Sarjana)	9	5.4%
3	Age		
	>20 years	3	2%
	21-25 years	9	5%
	26-30 years	23	14%
	31-35 years	56	33%
	36-40 years	31	18%
	>40 years	46	27%
4	Occupation		
	Housewife (IRT)	104	62%
	Public School Teacher/Lecturer	2	1%
	Private School Teacher/Lecturer	6	4%
	Private Employee	27	16%
	Civil Servant	4	2%
	Entrepreneur	12	7%
	Others	13	8%
5	Number of Children		
	1	3	2%
	2	9	5%
	3	23	14%
	4	56	33%
	>4	31	47%
6	Province		
	Banten	43	26%
	Yogyakarta (DIY)	2	1%
	Jakarta (DKI Jakarta)	23	14%
	West Java (Jawa Barat)	81	48%
	Central Java (Jawa Tengah)	7	4%
	East Java (Jawa Timur)	2	1%
	East Kalimantan (Kalimantan Timur)	2	1%
	Lampung	5	3%
	West Nusa Tenggara (NTB)	1	1%
7	Average Daily Gadget Usage Time for Children		
	Do not use gadgets	2	1%
	Up to 1 hour	56	33%
	1-2 hours	37	22%
	2-3 hours	26	15%
	3-4 hours	27	16%
	>4 hours	20	12%

Based on the table above, the characteristics of the respondents are evident. The majority of respondents are mothers, totaling 145 individuals (89%), while fathers account for 23 individuals (11%). The educational level of the parents is relatively high, with a substantial

proportion having obtained a diploma, bachelor's degree, or postgraduate degree, totaling 105 individuals (61.3%). The respondents predominantly fall within the young adult age group (36-40 years), amounting to 77 individuals (74%), and are mostly homemakers, totaling 104 individuals (80%). The common number of children is four, with 56 respondents (33%), and those with more than four children total 31 respondents (47%). The respondents mainly reside in Banten province (26%), with 23 individuals (14%) in DKI Jakarta and the largest number living in West Java, totaling 81 individuals (48%).

3.2. Statistical Results

The validity test results indicate that the computed r-value (rating) exceeds the critical r-value (label) at a significance level of 0.05, confirming that the questionnaire items are valid measures of the intended constructs. The reliability analysis further supports this, with a Cronbach's alpha of 0.780 for the variables of parental education level and knowledge of gadget usage, surpassing the threshold value of 0.70. This indicates that all items in the questionnaire for these variables are reliable. Additionally, the variable measuring the behavior of children aged 5-6 years using gadgets yielded a Cronbach's alpha of 0.870, well above the base value of 0.60, confirming the reliability of the statements in the questionnaire for this variable.

The normality test results show a significance value of 0.051 with an alpha level of 0.05, indicating that the data are normally distributed. This normality is crucial for the validity of many statistical tests. The linearity test results reveal a significance value of 0.300 with an alpha level of 0.05, suggesting a linear relationship between the two variables. This linearity supports the use of linear regression techniques and other analyses assuming a linear association, ensuring accurate and meaningful statistical inferences.

Correlation Test Results:

Table 2. Spearman Rank Correlation Results between Parents' Education Level and Gadget Use Behavior in Children Aged 5-6 Years

Correlations			
		Parents' Education Level	Gadget Use Behavior in Children Aged 5-6 Years
Parents' Education Level	Pearson Correlation	1	.108
	Sig. (2-tailed)		**.162**
	N	168	168
Gadget Use Behavior in Children Aged 5-6 Years	Pearson Correlation	.108	1
	Sig. (2-tailed)	**.162**	
	N	168	168

The Pearson product-moment correlation results indicate a correlation of 0.108 with a significance value of 0.168. This signifies that the relationship is not significant (0.168 > 0.05); hence, the null hypothesis (Ho) is accepted, indicating no significant relationship between parents' education level and gadget use behavior in children aged 5-6.

Table 3. Spearman Rank Correlation Results between Parents' Gadget Knowledge and Gadget Use Behavior in Children Aged 5-6 Years

		Parents' Gadget Knowledge	Gadget Use Behavior in Children Aged 5-6 Years
Parents' Gadget Knowledge	*Pearson Correlation*	1	.346**
	Sig. (2-tailed)		.000
	N	168	168
Gadget Use Behavior in Children Aged 5-6 Years	*Pearson Correlation*	.346**	1
	Sig. (2-tailed)	.000	
	N	168	168
***. Correlation is significant at the 0.01 level (2-tailed).*			

Source: Processed SPSS data, 2022

The Pearson product-moment correlation results indicate a correlation of 0.346 with a significance value of 0.000. This signifies a significant relationship (0.000 < 0.05), thus rejecting the null hypothesis (Ho) and confirming a substantial relationship between parents' gadget knowledge and gadget use behavior in children aged 5-6 years. Therefore, the findings of this study population can be generalized. The correlation coefficient (r) is 0.346 (between 0.20 and 0.399), indicating a low correlation based on Sugiyono's (2017:257) guidelines for interpreting correlation coefficients.

Table 4. Determination Coefficient Test

Model Summary				
Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	.346[a]	.120	.115	7.915
a. *Predictors: (Constant)*, Pengetahuan Gadget Orang tua				

Source: Processed SPSS 26 data, 2022

The hypothesis test for the determination coefficient in this study uses the formula KD: r^2 x 100%= $(0,346)^2$ x 100%=0,120 x 100%= 12%

The determination coefficient indicates that 12% of the variance in gadget use behavior in children aged 5-6 years can be explained by parents' gadget knowledge. Therefore, it can be concluded that the relationship between parents' gadget knowledge and gadget use behavior in children aged 5-6 years is 12%. In contrast, the remaining 78% is influenced by other variables not included in this study. There is a low relationship between parents' gadget knowledge and gadget use behavior in children aged 5-6 years (Zulhaini, 2024).

Table 5. Multiple Correlation Results Between Parents' Gadget Knowledge and Education Level with Gadget Use Behavior in Children Aged 5-6 Years

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df 1	df2	Sig. F Change
1	**.349[a]**	.122	.111	7.93089	.122	11.435	2	165	**.000**
a. Predictors: (Constant), pendidikan orang tua, pengetahuan gadget orang tua									

The Pearson product-moment correlation results show a correlation of 0.349 with a significance value of 0.000 (0.000 < 0.05). This indicates a significant relationship between parents' gadget knowledge and education level with gadget use behavior in children aged 5-6 years. Therefore, the findings of this study population can be generalized. The correlation coefficient (r) is 0.349, indicating a low correlation (between 0.20 and 0.399) based on Sugiyono's (2017:257) guidelines for interpreting correlation coefficients.

Discussion

The relationship between parents' educational level and their knowledge about gadgets and the behavior of children aged 5-6 years in using gadgets has become an increasingly relevant topic in contemporary research. Previous studies have underscored the role of parental guidance in moderating children's gadget use and development (Shin, 2014; Tibo & Ginting, 2020). The objective of this study was to determine whether there is a correlation between parents' educational level and knowledge about gadget usage and the gadget use behavior of young children. With the advent of digital technologies, gadgets have become ubiquitous in children's lives, often serving as tools for learning and entertainment (Goodenough, 1962; Roe, 1959). However, the implications of prolonged gadget use necessitate a deeper understanding of how parental education and knowledge can mitigate potential adverse effects and promote healthy usage habits among children (Indrijati in Patiung et al., 2019; Susanto in Sari, 2020).

The results indicated no significant correlation between parents' educational level and children's gadget use behavior, with a Pearson correlation coefficient of 0.108 and a significance

value of 0.168. This suggests that the educational attainment of parents alone does not substantially impact how children use gadgets (Hidaya et al., 2019; Trisnawati, 2021). On the other hand, a significant positive correlation was found between parents' knowledge about gadgets and their children's gadget use behavior, with a Pearson correlation coefficient of 0.346 and a significance level of 0.000. This finding highlights the importance of parents being well-informed about gadget use, as this knowledge appears to be more influential in managing and guiding children's gadget-related activities (Marpaung, 2018; Handrianto in Marpaung, 2018). The higher the parents' knowledge about the appropriate use of gadgets, the better they can regulate their children's gadget use, ensuring it is beneficial rather than detrimental (Pebriana, 2017; Sopiah, 2021).

Further analysis showed that 12% of the variance in children's gadget use behavior could be explained by parents' knowledge about gadgets, as indicated by the determination coefficient. This finding is crucial because it emphasizes that while parents' educational level provides a foundation, specific knowledge about gadgets is more directly related to managing children's gadget use (Sumarni et al., 2019; Setiawati et al., 2019). The results suggest that parents who understand the benefits and risks associated with gadget use can set more effective boundaries and guidelines for their children. This finding aligns with broader literature indicating that guided and supervised gadget use, facilitated by knowledgeable parents, benefits children's cognitive and social development (Joseph et al., 2022; Alam et al., 2020).

Comparing these results with previous findings reveals a nuanced understanding of the influence of parental factors on children's gadget use. Studies have consistently shown that children benefit from guided and supervised use of gadgets facilitated by parents who are informed about the potential impacts of technology (Goodenough, 1962; Roe, 1959; Shin, 2014). However, the lack of a significant correlation between parental education and children's gadget use behavior suggests that higher educational attainment does not automatically translate into better management of children's technology use (Indrijati in Patiung et al., 2019; Susanto in Sari, 2020). Instead, specific and targeted knowledge about the safe and effective use of gadgets plays a more critical role (Marpaung, 2018; Handrianto in Marpaung, 2018). This insight is valuable for designing interventions and educational programs that aim to improve children's gadget use behavior by enhancing parents' knowledge and awareness (Schriever, 2017; Saptatiningsih & Permana, 2019).

The findings of this study also support the notion that while general education provides parents with critical thinking and problem-solving skills, it is the specific knowledge about gadgets that enables them to guide their children's use effectively (Hidaya et al., 2019; Trisnawati, 2021). This distinction is important because it suggests that educational interventions should not only focus on improving general education levels but also on providing parents with detailed information about the effects of gadget use on children's development (Schriever, 2017; Saptatiningsih & Permana, 2019). For instance, educational programs could include workshops and resources that educate parents about setting screen time limits, choosing age-appropriate content, and understanding the potential psychological and physical impacts of prolonged gadget use (Joseph et al., 2022; Alam et al., 2020).

The significance of these findings lies in their potential to inform policy and educational initiatives aimed at parents. By focusing on enhancing parents' specific knowledge about gadgets, it is possible to mitigate some of the negative impacts of gadget use on children and promote healthier usage habits (Oduntan, 2022; Wicaksono & Aurielle, 2024). This approach could include developing informational campaigns and resources that provide practical advice on managing children's gadget use, such as setting boundaries, monitoring usage, and encouraging alternative activities that promote physical and cognitive development (Saptatiningsih & Permana, 2019; Schriever, 2017). Such targeted educational efforts can empower parents to make informed decisions and foster a balanced approach to technology use in their households (Oduntan, 2022; Wicaksono & Aurielle, 2024).

The study underscores the critical role of parents' knowledge about gadgets in influencing children's gadget use behavior. While general education provides a foundational understanding, specific and targeted knowledge about gadgets' use and impacts is essential for effective parental guidance (Sumarni et al., 2019; Setiawati et al., 2019). These findings suggest a need for focused educational interventions to enhance parents' understanding and management of their children's gadget use. Future research should continue to explore these dynamics, considering other moderating factors such as socioeconomic status, parental involvement, and children's characteristics, to develop comprehensive strategies that support children's healthy development in a digital age (Chubarov et al., 2021; Gamirova et al., 2021).

The implications of this research are far-reaching, highlighting the need for a multifaceted approach to managing children's gadget use. By equipping parents with the necessary knowledge and tools, it is possible to foster an environment that supports healthy development and mitigates the risks associated with excessive gadget use (Oduntan, 2022; Wicaksono & Aurielle, 2024). This research contributes to a growing body of literature that emphasizes the importance of informed parental involvement in navigating the challenges of raising children in a digital age (Schriever, 2017; Saptatiningsih & Permana, 2019). As technology continues to evolve, ongoing research and education will be essential in ensuring that children benefit from these advancements while minimizing potential harms (Joseph et al., 2022; Alam et al., 2020).

Conclusion

This study aimed to examine the relationship between parents' educational level and gadget knowledge with the gadget use behavior of children aged 5-6 years. The findings indicate that while parents' educational level does not significantly correlate with children's gadget use behavior, parents' gadget knowledge shows a low positive correlation, suggesting that better-informed parents can more effectively manage their children's gadget use. These insights highlight the importance of enhancing parental understanding of digital technology to foster healthier gadget use among children—the study's reliance on self-reported data and its predominantly maternal sample limit its generalizability. Future research should include a more diverse sample and consider additional variables such as socio-economic status and cultural factors. Longitudinal studies could also provide deeper insights into the long-term effects of parental gadget knowledge on children's development. In conclusion, this study underscores the critical role of parents' gadget knowledge in shaping children's gadget use behavior, emphasizing the need for targeted educational programs to support healthy child development in a digital age.

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