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Digital Devices and Childhood: The Relationship between Device Usage and Social Development in Khyber Pakhtunkhwa

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Abstract
The accelerated introduction of digital devices into the lives of children has sparked much controversy about the developmental impact of these technologies, especially in areas with less access to resources where parents are the key stakeholders in technology use. This study reviews the relationship between the trends in the use of gadgets and social growing of children with ages between 3 and 12 years in KPK (Khyber Pakhtunkhwa), Pakistan. According to Uses and Gratifications and Social Learning Theories, this study was using a quantitative survey, cross-sectional survey by 400 households and half of them are his mother and 50% is his father selected using stratified random sampling. The data was analyzed by means of the correlation test of Spearman rho. The findings showed that there is a strong negative correlation between the frequency and amount of time the device is used and the social development of children. On the other hand, parental attitude toward using the devices showed no meaningful connection to social outcomes, but there was a minor moderate effect on mediation strategies. These findings confirm that the relationship between digital exposure of children, parenting styles, and cultivation of their social skills is complicated and that culturally sensitive parenting education and policy execution are required in Pakistan.

Keywords: *Digital Devices, Childhood Development, Social Development, Device Usage, Khyber Pakhtunkhwa, Technology and Children, Screen Time*

1. Introduction

The digital technologies have become immersed in the life of children all over the world and have given them access to new forms of learning, play and communication. Simultaneously, the issues of such overdevelopment of screen time have been growing, as well, in the context of the children shaping their social ties (Livingstone and Blum-Ross, 2020). In the framework of such a nation, where the principles of the family and where the culture strongly shape the raising of the

children, the question to be raised is how the usage of the device will impact the main aspects of the social development, i.e. cooperation, empathy and proper communication. Long-term well-being is based on the skills in interpersonal interactions, emotional control, social development, and the ability to establish contact with other people (Mussen et al., 2019).The growing usage of smartphones, tablets, and other digital tools in childhood has created the concern that a decrease in the time spent in face-to-face interaction may be one factor impeding these skills. Although numerous studies in Western contexts indicate that excessive use of the device has negative effects (Twenge and Campbell, 2018), South Asian experiences are not so well researched, and the family intervention conditions are markedly different (by family involvement and socio-economic status). The paper examines the attitudes of parents towards the relationship between social development of children using digital devices and their usage in KPK. The study will make a locally informed contribution by looking at the duration of use, frequency of use, parents' perceptions and guidance approaches regarding technology in developing childhood in this area.

1.1 Research Objectives

1. To explore how different forms and durations of device use relate to the social growth of kids in KPK.
2. To examine how the regularity of device use affects the social outcomes of children.
3. To understand the connection between the parental attitudes toward digital gadgets and the social outcomes of children.
4. To determine how parental mediation strategies mediate how the use of gadgets influences social development.
5. To give an insight into the impact of culture and household relations on the social outcomes of kids in the digital environment.

2. Literature Review

2.1 Digital Technology Use and Social Growth.

The use of digital gadgets has become a source of concern in the impact of these gadgets on the social abilities of the youngsters. In the early years, it is specifically important that social development such as cooperation, empathy and communication should happen (Vygotsky, 1978). Research has come to a conclusion that the time spent on screen may prevent the chances of face-to-face communication which is the core of growth in such skills (Uhls et al., 2014). As an indicator, Hinkley et al. (2019) noticed that the longer the screen time period, the worse the outcome in terms of peer interaction and cooperative play. On the other hand, moderate and purposeful use of the devices can support social learning. As noted by Barr and Linebarger (2017), interactive tech educational applications and video calling will be capable of improving communication and cooperation with the help of parents. This suggests that device effects are context and nature-specific as opposed to device technology.

2.2 Frequency of Use and Social Outcomes.

Children with disordered use of devices tend to represent poorer social development. Livingstone et al. (2015) insisted that although the balanced use of devices may offer educative

or entertaining effects, excessive use of screens is likely to limit the possibility of meaningful face-to-face communications. On the same topic, Twenge and Campbell (2018) found that children who spent many hours using digital media had lower social well-being and diminished interpersonal interaction. These results indicate that the intensity of use is commonly more decisive than mere availability to technology.

2.3 Parental Theory Parental Attitude regarding device usage.

The perception of parents is significant in determining the ability of children to access and use digital media. The authors have discovered that the positive expectations regarding the learning capacity of devices are frequently accompanied by the fear of adverse behavioral and social consequences (Nikken and Schols, 2015). The attitudes of parents may have an impact on the level of monitoring and limitations, but not always the ultimate development outcomes. As Wartella et al. (2016) observed, parents who did not have a positive attitude towards technology were more restrictive and these restrictions did not always yield better social skills among children. Therefore, attitudes might direct the household practices, but not social competence.

2.4 Mediation Strategies and Social Development.

Parental mediation is considered one of the main aspects of having moderate impacts of digital devices. Valkenburg et al. (2013) differentiated between restrictive (setting limits), active (discussing content and use), and co-use (sharing device activities). Active mediation has mostly been associated with positive results. As an example, Nikken and Jansz (2014) determined that children exposed to active mediation had better emotional and social skills. Overreaction, on the contrary, may prove counterproductive by stimulating the use of marijuana under the carpet (Shin and Lwin, 2017). Mediation role is also culturally different. Collectivist values and parental power are still high in Pakistan, so a mediation can take various forms and can affect it differently than in the West (Hussain and Naz, 2021). This explains why it is crucial to take into account the local settings when assessing parental strategies.

2.5 Theoretical Framework

The Social Learning Theory proposed by Bandura (1977) emphasizes the process of learning behaviors in children as they observe other people, whether physically or using digital materials. The overuse of devices can shift the learning process to screen-based models among children instead of giving children an opportunity to exercise empathy and collaboration. Meanwhile, the Uses and Gratifications Theory (Katz et al., 1973) can be considered to explain the choice of media by children and parents to meet their needs, such as learning, entertainment, or even socialization. Combined, these theories provide a conceptual framework of the complicated interaction between use of devices and the development of social life.

2.6 Research Hypotheses:

H1: There is a significant association between patterns of use of digital devices (amount of time spent on them and the nature of the device) and social development in children.

H2: How often children engage with digital devices has a significant link to reduced social development.

H3: The attitudes of parents towards digital devices have a strong connection with social development of a child.
H4: The use of parental mediation strategies plus use of digital devices have a significant relationship with the outcome of social development among children.

3. Methodology

This research study was done through a quantitative, cross-sectional study to explore the opinions of parents regarding how digital device usage influences children's social growth within the region of Khyber Pakhtunkhwa (KPK), Pakistan. The quantitative method was taken since it enables the gathering of quantifiable data, which may be statistically tested whereas the cross-sectional method gave a one-time view of the situation.

The study was carried out among parents of children aged between 3 and 12 years of living in KPK. The Bureau of Statistics of Pakistan (2023) estimates the population of the province to be 40.86 million. Based on the demographic information, approximately 12.26 million children under the age of 312 form about 30% of this population (Pakistan Demographic and Health Survey, 201718). The age group of children aged 6-17 years resulted in the function of 1.89 million households with children as the target population of the study based on the average household size of 6.5 members (Jamal and Amir, 2021).

The appropriate sample size was determined using Cochran's formula, which indicated that at least 384 households were required. To ensure robustness and account for possible non-responses, the sample was increased to 400 households. A stratified random sampling method was applied to capture diversity across the province. The sample was distributed across seven administrative divisions—Peshawar (57), Mardan (57), Malakand (57), Hazara (57), Kohat (57), Bannu (57), and Dera Ismail Khan (58). Within each division, participants were further stratified by gender and by urban–rural location, ensuring balanced representation of male and female parents.

Data collection relied on a structured questionnaire designed specifically for this research. The survey included questions on demographic characteristics, the frequency and duration of children's device use, the types of devices used, parental attitudes toward technology, and parental mediation practices. It also asked parents to share observations about their children's social development. To make the tool accessible, the questionnaire was made available in both English and Urdu.

A pilot study was conducted among 100 parents in the urban and rural regions of KPK before the actual survey. The pilot outcomes validated the stability of the questionnaire, and the value of Cronbach alpha of the most important variables is more than 0.70. Social scientists, media and child development expert reviewers also tested the instrument to guarantee its accuracy and coherence to the research goals.

Analysis of the responses was conducted with a cleaned form, removing any questionnaire that had not been filled in, all the missing values were treated with listwise deletion, and all possible outliers were deleted, in order to ensure precision. The completed data set was coded and inputted into SPSS and coding of Likert scale items particularly.

To analyze the data, Spearman rho correlation was used for the correlation between the data of the use of digital gadgets in relation to the social growth of young individuals. Independent samples t-tests and one-way analysis of variance were also used where needed to assess differences between demographic groups. The mediation strategies and the moderating effects of parental attitudes were studied in order to have a more specific image. Such a systematic manner ensured that the findings were relevant as well as statistically sound in relation to the objectives of the research.

4. Results

4.1 Correlation between Device Usage Patterns and Social Development (H1)

Variable	Social Development (r)	Sig. Level
Duration of device use	–0.141**	p < 0.01
Smartwatch usage	–0.112*	p < 0.05
Mobile phone usage	–0.042	n.s.
Laptop/Computer/Smart TV/Gaming Console usage	Not significant	—

n = 400; p < 0.05, **p < 0.01*

The association was found to be significant with a negative value of the duration of digital device use and the social development of children (r = -0.141, p < 0.01). Another negative association was also found to be weak yet significant in the use of a smart watch (r = -0.112, p < 0.05). Other devices, such as cell phones, laptops, computers, digital TVs, and gaming systems did not show significant correlations with social development. Such results partially prove H1, which is the amount of time spent on devices is a more decisive factor in defining social development rather than the type of device involved.

4.2 Association between Frequency of Device Usage and Social Outcomes (H2)

Variables	Mean	S.D	1	2
1. Frequency of Device Usage	3.030	0.850	1.000	
2. Social Growth of the Child	2.350	0.830	-0.301**	1.000

n = 400; p < 0.05, **p < 0.01*

The results show a moderate negative correlation (r = -0.301, p < 0.01), confirming that children who frequently use digital devices demonstrate lower levels of social development. This provides strong support for H2.

4.3 Parental Attitudes and Social Development (H3)

Variables	Mean	S.D	1	2
1. Parental Attitude	2.990	0.500	1.000	
2. Social Development	2.350	0.830	-0.030	1.000

n = 400; p < 0.05, **p < 0.01*

These results indicate that parental perspectives have no meaningful link to children's social growth (r = -0.030, p > 0.05). Although parents may hold different views about technology, these perceptions do not seem to have a direct impact on children’s social development. This indicates that while parents express opinions about the effects of device use, such attitudes by themselves do not necessarily translate into measurable social outcomes. Therefore, H3 is not supported.

4.4 Mediation Strategies and Social Development (H4)

Variables	Mean	S.D	1	2	3
1. Device Use Regularity	3.030	0.850	1.000	0.020	-0.301**
2. Parental Guidance Strategies	3.780	0.630	0.020	1.000	0.010
3. Children's Social Skills	2.350	0.830	-0.301**	0.010	1.000

n = 400; p < 0.05, **p < 0.01*

"These findings show that how frequently children use devices has a negative correlation to social outcomes (r = -0.301, p < 0.01). However, no association was found between parental guidance strategies and children's social outcomes (r = 0.010, p > 0.05). Findings show that parental restrictions and guidance did not significantly weaken the negative association between device frequency and social skills. Thus, mediation strategies only partially support H4.

5. Discussion

The findings highlight a clear negative link between digital device exposure and children's social development, consistent with prior research that associates increased screen time with reduced interpersonal interaction (Uhls et al., 2014; Twenge & Campbell, 2018). The significance of usage duration and frequency supports Social Learning Theory by illustrating that prolonged reliance on digital role models may limit real-life social learning.

Interestingly parental attitudes and mediation strategies failed to become important predictors of social outcomes of youngsters. This is unlike the results of the Western environment, where mediation has been reported to have a more protective role (Livingstone et al., 2017). The same can be described by multiple factors in the case of Khyber Pakhtunkhwa, such as cultural customs, the impact of extended families, and a relatively low level of digital literacy among parents. The Uses and Gratifications Theory can be applied here as both children and parents can perceive gadgets not as a learning or social enhancement tool but as an amusement, a distraction tool.

6. Conclusion and Implications

The findings of the present study show that there is a relationship between the weaker form of social development in children in KPK, Pakistan, and the longer and increased usage of digital devices but it does not seem that mediation practices and parental attitudes play an essential role. This would suggest that interventions ought to be formulated in a manner that they are sensitive to local cultural and social realities. This would imply that interventions should be formulated in such a way that they are sensitive to local cultural and social realities. This could be done through practical interventions such as parental awareness programs which will highlight the risks of overuse of devices, digital literacy which will help them to be aware of how to approach media trends of their children, and policy frameworks which will promote responsible and healthy use of technology. Moreover, they have to expand their further study beyond the cross-sectional study designs and apply longitudinal research design to justify the cause and effect correlation. The other issues that will be of interest are the interaction of broader processes, including socio-economic status, cultural norms and family processes, with the use of technology to influence the social development of children.

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