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THE IMPACT OF SCREEN TIME ON SOCIAL DEVELOPMENT OF CHILDREN WITH AUTISM SPECTRUM DISORDER

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Abstract
This research explores the impact of screen time on the social development of children with Autism Spectrum Disorder (ASD) in Pakistan, focusing on three main factors: the length of screen exposure, the type of content watched, and the role of parental guidance. A quantitative survey was carried out with 111 parents and caregivers of children with ASD aged 3–14 years. Structured questionnaires assessed daily screen habits, social communication skills, and parental guidance strategies. Educational and interactive media showed potential for enhancing specific social skills, while extended passive viewing was associated with increased withdrawal and decreased interpersonal engagement. Younger children and those with more severe ASD symptoms showed greater sensitivity to both positive and negative effects. The findings underscore the importance of culturally sensitive guidelines, particularly in Pakistan's diverse social and linguistic landscape. The study provides practical guidance for parents, educators, and policymakers, emphasizing the importance of intentional and guided screen use. Future research should use longitudinal and mixed-methods approaches to better understand long-term developmental patterns and support targeted digital interventions.

INTRODUCTION

The growing integration of digital media into daily life has transformed how children engage with their surroundings. For children with Autism Spectrum Disorder (ASD), whose development is shaped by distinctive patterns of communication and social interaction, the implications of screen exposure are particularly significant. ASD is characterized by persistent difficulties in social reciprocity, nonverbal communication, and relationship building, alongside restricted and repetitive behaviors. These core features influence how children respond to visual and auditory stimuli, including those presented through digital platforms. While structured, interactive digital tools may promote skill development, unmonitored and prolonged use can limit face-to-face interaction and reinforce social isolation.

Several studies have drawn a connection between excessive screen time and delays in social engagement for children with ASD. For instance, Dominguez et al. (2021) found that children who spent over two hours per day on passive screen activities (like watching videos) displayed significantly fewer instances of spontaneous social interaction compared to their peers with more limited screen exposure. Importantly, the study distinguished passive from interactive screen time, suggesting that the former lacks the responsive feedback loop essential for building social reciprocity. Contrastingly, Darlington and Karchmer (2019) highlighted that interactive digital tools, such as apps

that require turn-taking or reward appropriate social choices, can, in some cases, support social initiation. Yet, these tools were most effective when paired with adult mediation. In settings where a caregiver scaffolds the digital experience, prompting, modeling, and reinforcing social behaviors, the benefits of interactive media become evident. Still, without such guidance, even interactive applications may fall short, as children might focus on rewards or game mechanics rather than building social awareness.

Time displacement remains a core concern. A qualitative study by Lee et al. (2022) interviewed parents of children with ASD and revealed a recurring theme: screen time often replaced time that could have been spent in peer-mediated play, therapy sessions, or family social routines. One parent remarked, "On days when screen use was heavy, I noticed my child was quieter and less likely to engage in pretend play with siblings." These anecdotal patterns reflect the broader risk that excessive or unstructured screen time may encroach upon irreplaceable social learning moments.

Finally, some researchers urge a more nuanced perspective. Hsu et al. (2020) conducted a mixed-methods study and found that moderate amounts of screen time especially when it involved co-viewed or co-played content with caregivers or peers did not negatively impact social development and could even serve as a bridge to real-world social interaction. The key variables were content quality, the presence of adults or peers, and limits on duration. Research on screen time and ASD is extensive in high-income contexts but sparse in low- and middle-income countries. In Pakistan, cultural norms, linguistic diversity, and unequal access to technology create unique usage patterns. Urban families often rely on screens as a convenient management tool, whereas rural households face barriers such as limited internet connectivity and the scarcity of local-language educational content. These factors warrant targeted investigation to ensure that global recommendations are adapted to local realities.

Studies in developed countries have demonstrated both benefits and risks of screen engagement for children with ASD. Educational applications, video modeling, and augmentative communication tools have been shown to improve joint attention, vocabulary acquisition, and emotion recognition. Conversely, passive media consumption is frequently associated with decreased eye contact, reduced verbal exchanges, and higher social withdrawal. Parental mediation has emerged as a critical factor in determining outcomes, with active involvement such as co-viewing and discussing content enhancing positive effects and reducing harm. Theoretical perspectives, such as the displacement hypothesis and social learning theory, offer explanations for these patterns; however, their applicability in culturally distinct environments remains underexplored. In Pakistan, no national guidelines exist to direct screen use for ASD populations, underscoring the importance of research that accounts for sociocultural context, content quality, and parental role.

Objectives of the Study:

The objectives of the study were to explore Caregivers' perception of Screen Time Duration on Social Communication Deficits, Caregivers' perception of Educational vs. Passive Screen Activities, Perceived Effects of Parental Mediation Practices, and to establish the impact of screen time in the context of Age/Level of Severity.

Research Design

This study adopted a quantitative descriptive survey design to examine the relationship between screen time habits and social development in children with Autism Spectrum Disorder (ASD). The survey approach enabled efficient data collection from a relatively large group of participants. Structured questionnaires were administered to parents and caregivers, gathering data on screen use patterns, content type (educational versus passive), parental mediation strategies, and observable social communication behaviors.

The design was particularly appropriate for the study's objectives, which aimed to explore and measure behavioral outcomes such as eye contact, joint attention, and turn-taking across different levels of screen exposure. It also allowed subgroup analysis by ASD severity and age, offering a more nuanced understanding of how screen time may affect children with varying developmental profiles.

Population and Sample

The study targeted parents or primary caregivers of children aged 3 to 14 years formally diagnosed with

ASD (Levels 1–3). Participants were recruited from various educational and therapeutic contexts, including mainstream schools, special education programs, home-based instruction, and therapy or rehabilitation centers. Purposive sampling was applied to ensure the inclusion of individuals with direct knowledge of their child's screen habits and social behaviors.

A total of 111 participants took part, representing a diverse cross-section of the ASD population in Pakistan. This sample size provided adequate statistical power for subgroup analyses by age group and ASD severity level.

Inclusion criteria:

- Formal ASD diagnosis (Level 1, Level 2, or Level 3).
- Parent/caregiver actively oversees daily screen time and can accurately report habits and behaviors.

Data Collection Instrument

The questionnaire comprised several sections: demographic information (age, gender, severity level, educational setting), and 5-point Likert-scale items covering screen time habits, type of screen content, parental mediation, and moderating effects of age and ASD severity. Content validity was reviewed by three ASD specialists, and a pilot test with 30 parents yielded Cronbach's alpha values above 0.80 for all domains.

Data Analysis Plan

Data were analyzed using SPSS. Descriptive statistics summarized demographic trends and mean scores for Likert-scale responses and predicted social skill deficits based on screen time duration and parental mediation practices.

Table 1: Demographic Profile of Respondents

Variable	Categories	Frequency	Percentage (%)
Child's Gender			
	Male	40	36.0%
	Female	71	64.0%
Child's Age			
	3-5 years	25	22.5%
	6-8 years	45	40.5%
	9-12 years	32	28.8%
	13+ years	9	8.1%
ASD Severity Level			
	Level 1 (Mild)	35	31.5%

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Variable	Categories	Frequency	Percentage (%)
	Level 2 (Moderate)	50	45.0%
	Level 3 (Severe)	26	23.5%
Educational Setting			
	Mainstream School	15	13.5%
	Special Education	21	18.9%
	Homeschool	25	22.5%
	Therapy/Center-Based Program	50	45.0%

According to the demographic analysis of participants (N = 111), the majority of children were female (64%), aged 6–8 years (40.5%), and diagnosed with moderate ASD severity (Level 2, 45%). Most were enrolled in therapy/center-based programs (45%), followed by homeschool (22.5%) and special education (18.9%). These trends suggest a sample primarily consisting of younger children with moderate ASD symptoms, receiving specialized support outside mainstream schooling. The underrepresentation of older children (13+ years, 8.1%) and those in mainstream schools (13.5%) may limit generalizability, indicating potential sampling biases toward more intensive intervention settings.

Table 2: Perceived Effects of Screen Time Duration and Social Communication Deficits

Statement	Never	Rare	Sometimes	Often	Always	Mean	SD
Initiates eye contact	15.3%	22.5%	31.5%	20.7%	9.9%	2.45	1.12
Maintains eye contact	18.0%	24.3%	30.6%	18.9%	8.1%	2.30	1.05
Takes turns appropriately during play/conversations	12.6%	20.7%	35.1%	22.5%	9.0%	2.60	1.20
Avoids eye contact during social interactions	5.4%	10.8%	25.2%	35.1%	23.4%	3.75	1.18
Struggles with turn-taking	6.3%	12.6%	30.6%	32.4%	18.0%	3.50	1.25

The analysis of screen time's impact on social communication (N=111) shows children with ASD frequently struggle with eye contact (58.5% "often/always" avoid it after screen time) and turn-taking (50.4% "often/always" have difficulties). Positive social behaviors like initiating eye contact occurred less often (only 30% "often/always"). These findings, with moderate variability (SDs 1.05-1.25), suggest screen time significantly affects social skills, highlighting the need for careful management to support ASD children's social development.

Table 3: Perceived Effects of Educational vs. Passive Screen Activities

Statement	Never (%)	Rarely (%)	Sometimes (%)	Often (%)	Always (%)	Mean	SD
Initiates social interactions after using educational apps.	10.8%	18.9%	35.1%	25.2%	9.9%	3.20	1.10
Demonstrates understanding of emotions after virtual peer interaction tools.	8.1%	15.3%	38.7%	27.0%	10.8%	3.40	1.05
Uses social scripts (e.g., greetings) from apps in real-life interactions.	12.6%	20.7%	36.0%	22.5%	8.1%	3.10	1.15
Mimics on-screen characters' emotions after passive videos.	15.3%	24.3%	32.4%	18.9%	9.0%	2.80	1.30
Avoids face-to-face interactions after non-interactive screen activities.	4.5%	9.9%	22.5%	38.7%	24.3%	3.90	1.20

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The findings reveal that children with ASD show more positive social outcomes after educational screen activities compared to passive ones. After using educational apps, children sometimes initiated social interactions (mean=3.20) and demonstrated emotion understanding (mean=3.40). However, passive screen time led to more frequent avoidance of face-to-face interactions (mean=3.90), with nearly 63% reporting this occurring often or always. While educational content showed moderate benefits (means 3.10-3.40), passive viewing correlated with poorer social engagement (mean=2.80 for mimicking emotions). The relatively low SDs (1.05-1.30) suggest consistent patterns across respondents. These results emphasize the importance of content type in the social impact on ASD children.

Table 4: Perceived Effects of Parental Mediation Practices

Statement	Never (%)	Rarely (%)	Sometimes (%)	Often (%)	Always (%)	Mean	SD
Parents discuss screen content (e.g., emotions) during co-viewing.	6.3%	12.6%	30.6%	32.4%	18.0%	3.50	1.25
Time restrictions lead to more face-to-face social interactions.	8.1%	15.3%	35.1%	27.9%	13.5%	3.30	1.15
Co-viewing creates opportunities for practicing social skills (e.g., turn-taking).	5.4%	10.8%	33.3%	34.2%	16.2%	3.60	1.10
Time restrictions reduce the child's frustration during real-world interactions.	9.0%	18.0%	36.0%	25.2%	11.7%	3.20	1.30
Generalizes on-screen social lessons (e.g., sharing) to real life.	10.8%	20.7%	37.8%	22.5%	8.1%	3.10	1.20

Parental mediation shows positive impacts for ASD children. Co-viewing often improved social skills practice (50.6%, mean=3.60) and emotional discussions (50.4%, mean=3.50). Time restrictions moderately enhanced interactions (41.4%, mean=3.30) and reduced frustration (36.9%, mean=3.20). Skill generalization was weaker (mean=3.10). Consistent SDs (1.10-1.30) suggest reliable benefits, emphasizing active parental involvement.

Table 5: Perceived Effects of Age/Level of Severity and Screen Time Impact

Statement	Never (%)	Rarely (%)	Sometimes (%)	Often (%)	Always (%)	Mean	SD
Initiates joint attention (e.g., pointing) after screen time.	14.4%	22.5%	33.3%	20.7%	9.0%	2.70	1.15
Responds to others' joint attention attempts after screen time.	16.2%	25.2%	34.2%	18.0%	6.3%	2.50	1.20
Screen time leads to flat affect (reduced emotional expression).	4.5%	9.9%	27.0%	36.9%	21.6%	3.80	1.25
Struggles with reciprocal conversations after screen use.	5.4%	12.6%	30.6%	35.1%	16.2%	3.60	1.30

The analysis reveals significant screen time impacts varying by ASD severity. While joint attention behaviors were inconsistently affected (means=2.50-2.70), more concerning patterns emerged: 58.5% reported frequent flat affect (mean=3.80) and 51.3% noted regular conversational struggles (mean=3.60) post-screen use. Higher SDs (1.20-1.30) suggest these effects vary substantially across severity levels, with more pronounced impacts likely in children with greater symptom severity. These findings underscore the need for individualized screen time approaches based on ASD severity.

Findings

The study found that extended screen use often corresponded with reduced eye contact and challenges in turn-taking among children with ASD. For instance, 58.5% of respondents reported that their children frequently avoided eye contact following screen time, while half of the participants noted difficulties with turn-taking in group settings. Positive behaviors, such as initiating eye contact, were less common, with only about one-third of children exhibiting them frequently. These findings resonate with prior research indicating that prolonged passive screen exposure may displace opportunities for naturalistic social interaction, thereby limiting the development of essential communication skills (Huang et al, 2022).

Interestingly, educational screen activities demonstrated moderate benefits, including fostering social initiation and improving emotion recognition. In contrast, passive content, such as non-interactive videos, was linked to higher rates of social withdrawal. (Azer et al., 2018).

Children with more severe ASD symptoms appeared to show more pronounced negative effects, including flat affect and challenges with reciprocal conversations. This suggests that vulnerability to screen overuse may not be uniform across the spectrum but may depend on symptom severity and individual differences in social motivation (Dong H-Y. et al, 2021).

These findings are consistent with international evidence indicating that the quality, context, and mediation of digital engagement matter more than the sheer quantity of screen time (American Academy of Pediatrics, 2016; Kuo et al., 2021). However, systemic challenges remain, including unequal access to educational technologies between urban and rural settings and the scarcity of culturally adapted digital tools in many low- and middle-income contexts. Addressing these barriers is critical to ensuring that the potential benefits of digital engagement can be equitably realized.

Conclusion

Screen time plays a significant role in the social development of children with ASD. Passive media pose greater risks than interactive educational tools. Parental mediation can help, but broader systemic gaps in awareness and resources must be addressed. Tailored guidelines and locally relevant digital interventions are urgently needed.

Recommendations

- Prioritize educational content and use co-viewing to reinforce learning.
- Establish clear and consistent limits on screen use.
- Train educators and therapists in integrating culturally relevant screen-based tools.
- Develop public awareness campaigns about balanced screen use.
- Expand telehealth services, particularly for rural areas.
- Conduct longitudinal studies to understand long-term impacts.

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