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Screen Use, Parent–Child Interaction, and Social Interaction Behaviors in Autistic Children

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Abstract

The rapid expansion of digital technologies has transformed children's everyday environments, raising concerns about excessive screen use and its potential developmental implications. Although research on screen use has increased substantially, relatively little is known about how screen use may relate to family interaction processes among autistic children. The present study aimed to examine the relationships among screen use, autism severity, parent–child interaction behaviors, and children's social interaction behaviors in autistic children. The study employed a correlational research design. Participants included 784 parent–child pairs recruited from multiple provinces across Türkiye. Data were collected through a demographic questionnaire, the Autism Behavior Assessment Tool (ABAS), and parent-reported measures of children's screen use patterns. In addition, observational interaction data were obtained from a subsample of 102 mother–child dyads using the Maternal Behavior Rating Scale–Turkish Version (MBRS-TV), the Child Behavior Rating Scale–Turkish Version (CBRS-TV), and the Social Interaction Assessment Instrument (SIAI-TV). The findings indicated that children's screen use was positively associated with autism severity and autistic interaction behaviors, while negatively associated with attention, interaction initiation, and overall interaction behaviors. Maternal interaction behaviors were positively associated with children's interaction behaviors and negatively associated with children's screen use. These results suggest that higher levels of screen exposure may be related to reduced social interaction opportunities among autistic children. Overall, the findings highlight the importance of considering family interaction processes when evaluating digital media use in autistic children and suggest that balanced media routines and responsive parenting may support healthier developmental outcomes.

Keywords: autistic children, screen use, parent–child interaction, social interaction, digital media use

Introduction

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition characterized by persistent difficulties in social communication and interaction as well as restricted and repetitive patterns of behavior and interests (American Psychiatric Association, 2013). In recent years, the autism community and disability scholars have increasingly emphasized the importance of affirming, respectful language. While person-first language ("children with autism") has historically been used to separate the diagnosis from the individual, identity-first language ("autistic children") is widely preferred by self-advocates and contemporary researchers because it views autism as an inherent and valued aspect of an individual's identity rather than a medical deficit to be cured (Bottema-Beutel et al., 2021; Dwyer et al., 2022; Monk et al., 2022). Reflecting this paradigm shift toward neurodiversity-affirming practices, this manuscript intentionally adopts identity-first terminology throughout to foster inclusive and respectful research reporting (American Psychological Association, 2021; Botha et al., 2021).

In recent decades, the prevalence of autism has increased substantially worldwide, prompting growing interest in factors that influence the developmental trajectories and daily experiences of children with autism. Alongside these developments, the rapid expansion of digital technologies has transformed children's everyday environments, making screen-based media an increasingly prominent aspect of childhood. A substantial body of research has examined the developmental implications of children's screen use. Studies conducted with typically developing populations suggest that excessive screen exposure may be associated with a range of developmental outcomes, including reduced cognitive and language performance, lower psychological well-being, and behavioral difficulties (Madigan et al., 2019; Twenge & Campbell, 2018; Stiglic & Viner, 2019). Research has also highlighted the growing role of mobile and interactive media in early childhood environments. With the widespread availability of smartphones and tablets, young children increasingly encounter digital media in everyday contexts. While such technologies may offer educational opportunities, concerns remain regarding their potential effects on social interaction, attention, and developmental outcomes during early childhood (Radesky et al., 2015). In addition, digital media use within family contexts has been linked to changes in parent-child interaction patterns. For example, interruptions caused by technology use—often referred to as “technoference”—may reduce opportunities for direct interaction

between parents and children (McDaniel & Radesky, 2020; Radesky & Christakis 2016). These findings highlight the importance of examining how digital media use intersects with family interaction processes during early development.

Although the literature on children's screen use is expanding rapidly, research focusing specifically on autistic children remains relatively limited. Existing studies indicate that children with ASD may engage with digital media differently from their typically developing peers. For instance, autistic children tend to spend more time using screen-based technologies and may show stronger preferences for digital activities compared with their peers (Mazurek & Wenstrup, 2013). Similarly, recent studies suggest that screen exposure may be associated with behavioral and developmental outcomes among children on the autism spectrum (McDaniel & Radesky, 2018). The structured and predictable nature of digital environments may be particularly appealing for autistic children, who often demonstrate preferences for repetitive activities and predictable routines. At the same time, digital technologies may also offer potential benefits for autistic children. Technology-assisted interventions and digital tools have been used to support communication, learning, and social engagement in this population (Odom et al., 2015). However, the increasing accessibility of digital devices has also raised concerns regarding excessive screen use and the possibility of problematic or addictive patterns of media consumption. Recent research conceptualizes problematic media use as a behavioral pattern characterized by excessive engagement, difficulty disengaging from digital media, and interference with daily functioning. To assess such behaviors, standardized tools such as the Problematic Media Use Measure (PMUM) have been developed to evaluate problematic screen media use in children (Domoff et al., 2019). Some researchers have even suggested that early and intensive exposure to audiovisual media may influence neurodevelopmental processes related to autism, although these claims remain controversial and require further empirical investigation (Heffler & Oestreicher, 2020).

One domain that may be particularly sensitive to children's screen use is parent-child interaction. Parent-child interaction plays a critical role in the development of communication, social engagement, and emotional regulation skills, especially among autistic children (Siller & Sigman, 2008). Positive interaction patterns between parents and children have been shown to support language development, joint attention, and adaptive functioning in children on the autism

spectrum (Mahoney & Perales, 2003; Mahoney & MacDonald, 2007; Diken & Mahoney, 2013; Karaaslan, Diken, & Mahoney, 2011). However, increasing reliance on digital devices within households may reduce opportunities for shared activities and direct engagement between parents and children.

Despite the growing interest in digital media use and autism, several gaps remain in the literature. First, relatively few studies have investigated screen use or problematic screen use specifically among autistic children. Second, existing research has primarily focused on individual behavioral outcomes rather than examining how children's screen use may influence family interaction processes, particularly parent-child interaction. Third, studies examining digital media use in autism often focus on intervention contexts, leaving everyday family environments relatively underexplored. Addressing these gaps is important for understanding how digital media use may shape developmental experiences in autistic children. Investigating the relationship between screen use and parent-child interaction may provide valuable insights into how digital technologies influence family dynamics and social development in this population.

Purpose of the Study

The purpose of this study is to examine the relationships among screen use, autism severity, parent-child interaction behaviors, children's interaction behaviors, and social interaction behaviors in autistic children. Specifically, the study investigates whether children's screen use is associated with the quality of parent-child interaction and children's social interaction outcomes, while also considering the role of autism severity in shaping these relationships. Within this framework, screen use is conceptualized as a behavioral factor that may influence both children's interaction behaviors and the quality of parent-child interactions. At the same time, autism severity is expected to be associated with both screen use behaviors and children's social interaction outcomes. In addition, mothers' interaction behaviors are expected to play a facilitating role in children's interaction behaviors during mother-child interactions.

This study addresses the following hypotheses:

H1. Autistic children demonstrate varying levels of screen use and potential screen use during waking hours.

H2. Autism severity is significantly associated with children's screen use patterns.

H3. Higher levels of screen use among autistic children are associated with lower-quality parent–child interaction behaviors.

H4. Mothers' interaction behaviors are positively associated with children's interaction behaviors during mother–child interactions.

H5. Children's social interaction skills (e.g., typical interaction and autistic interaction behaviors) are significantly associated with their levels of screen use.

H6. Screen use, autism severity, mothers' interaction behaviors, children's interaction behaviors, and children's social interaction skills are significantly interrelated.

Method

Research Design

This study employed a correlational research design to examine the relationships among screen use, autism severity, parent–child interaction behaviors, and social interaction skills in autistic children. Correlational research designs are commonly used in educational and behavioral sciences to investigate the strength and direction of relationships among variables without manipulating them (Creswell & Creswell, 2018; Fraenkel et al., 2019).

Prior to data collection, ethical approval for the study was obtained from the Ethics Committee of Anadolu University (Approval No. 732353, Date: May 28, 2024). Participation in the study was voluntary, and informed consent was obtained from all participating parents.

Participants

The sample consisted of 784 parent–child pairs recruited from different regions of Türkiye using criterion sampling, a purposive sampling technique. The inclusion criterion required that the

child had a formal diagnosis of ASD diagnosed by child psychiatrists and had legal report on the diagnosis. The average age of mothers participating in the survey was 37.17 years ($SD = 6.91$), ranging from 22 to 70 years. Fathers had a mean age of 40.94 years ($SD = 7.21$), ranging from 24 to 73 years. The sample largely represented parents in middle adulthood with diverse educational backgrounds.

Participants were recruited from multiple provinces across Türkiye, reflecting a geographically diverse sample. The largest proportion of participants was from Eskişehir ($n = 173$, 22.1%), followed by Konya ($n = 77$, 9.8%), Gaziantep ($n = 67$, 8.5%), and Afyonkarahisar ($n = 66$, 8.4%). Additional participants were from Bursa ($n = 51$, 6.5%), Antalya ($n = 42$, 5.4%), Şanlıurfa ($n = 38$, 4.8%), and Mardin ($n = 37$, 4.7%). Smaller proportions of participants were recruited from Trabzon ($n = 29$, 3.7%), İstanbul ($n = 27$, 3.4%), Ankara ($n = 23$, 2.9%), and Sakarya ($n = 19$, 2.4%). Further representation included Osmaniye ($n = 15$, 1.9%), Erzincan ($n = 15$, 1.9%), İzmir ($n = 14$, 1.8%), Adana ($n = 12$, 1.5%), Balıkesir ($n = 10$, 1.3%), and Mersin ($n = 8$, 1.0%). A smaller number of participants were recruited from Kırklareli ($n = 6$, 0.8%), Zonguldak ($n = 6$, 0.8%), Isparta ($n = 5$, 0.6%), Kars ($n = 4$, 0.5%), Düzce ($n = 4$, 0.5%), and Hatay ($n = 3$, 0.4%). In addition, 46 participants (5.9%) were recruited from other provinces, each contributing one or two participants.

For the interaction analysis component of the study, a subsample of 102 autistic children and their mothers participated in direct observation sessions. The mean age of the children was 64.98 months ($SD = 18.17$), with ages ranging from 24 to 101 months. The average age at which children received an ASD diagnosis was 28.34 months ($SD = 10.02$). The majority of children in the subsample were male (81.4%).

Measures

Demographic Information Form. A structured demographic questionnaire was developed to collect information about family characteristics, children's developmental histories, and household technology use patterns. Crucially, parent media habits were captured by asking: *"On average, how many hours per day do you spend using digital screens (including smartphones, TVs, tablets, and computers)?"* asked separately for mothers and fathers. For the child's screen

exposure, parents were asked: "In the past month, on a typical day, approximately how many hours does your child spend watching or interacting with screens?" Device-specific screen variables were operationally defined as the daily duration (in hours) spent exclusively on that modality, captured through individual sub-questions for: (a) televisions, (b) tablets, and (c) smartphones.

Maternal Behavior Rating Scale – Turkish Version (MBRS-TV). The MBRS-TV is an observational measure designed to evaluate parental interaction behaviors during parent–child interactions. Parental interaction behaviors were evaluated using the Maternal Behavior Rating Scale, the Turkish adaptation of the Maternal Behavior Rating Scale (MBRS-TV). The adaptation and psychometric evaluation were conducted by Diken (2009) with 123 mother–child dyads whose children were between 18 and 72 months of age and had expressive language delay, mild intellectual disability, or autism. The MBRS-TV is an observational rating scale consisting of 12 items assessing parental behaviors during parent–child interaction. Exploratory factor analysis indicated that the Turkish version of the scale consisted of three factors (Responsiveness, Affect, and Achievement-oriented/directiveness), explaining 73.40% of the total variance. Internal consistency reliability was assessed using Cronbach's alpha coefficients. The alpha values for the subscales were: Responsive–Sensitive behavior: $\alpha = .86$, Affect: $\alpha = .87$, Achievement-oriented/Directive behavior: $\alpha = .61$. In using the scale, mother–child interactions were video-recorded during 5–10 minute play sessions, in which mothers were instructed to interact with their children as they normally would during play activities. Developmentally appropriate toys were provided to facilitate natural interaction. Items are rated using a 5-point Likert-type scale. Higher scores on the *Responsiveness* and *Affect* subscales indicate more positive interaction behaviors. For the *Achievement-oriented/directiveness* subscale, a score of 3 is considered the optimal interaction level. In scoring this dimension, ratings of 5 are recoded as 1 and ratings of 4 are recoded as 2, following the scoring procedure proposed in the scale manual. The MBRS-TV provides mean scores for each subscale rather than a total score. To facilitate descriptive classification, continuous scale mean scores were segmented using standardized cut-offs: values from 1.00 to 2.33 were classified as "Low," 2.34 to 3.66 as "Moderate," and 3.67 to 5.00 as "High". Due to the low internal consistency of the Achievement-

oriented/directiveness subscale ($\alpha = .61$), all findings related to this factor are interpreted with strict caution.

Child Behavior Rating Scale – Turkish Version (CBRS-TV). The CBRS-TV evaluates children's behavioral engagement during interactions with caregivers. Children's interaction behaviors were assessed using the Child Behavior Rating Scale, the Turkish adaptation of the Child Behavior Rating Scale (CBRS-TV) developed to evaluate children's engagement during parent-child interaction. The Turkish adaptation was conducted by Diken (2009) using the same sample of 123 mother-child dyads. The scale consists of 7 observational items including attention and engagement, persistence, participation, joint attention, initiation, cooperation, and emotional regulation. evaluating children's interaction behaviors in attention and initiation subdomains. The Turkish adaptation of the scale has demonstrated strong validity and reliability. The two factors explained 78.86% of the total variance. Internal consistency reliability coefficients were reported as: Attention factor: $\alpha = .79$, initiation factor: $\alpha = .91$, and total scale: $\alpha = .90$. Item-total correlation coefficients ranged between .52 and .89, demonstrating strong discrimination between items. Children's behaviors during 10–15 minute play interactions were evaluated using a 5-point Likert rating system. Higher scores indicate more adaptive and developmentally appropriate interaction behaviors. Continuous scale scores were converted into ordinal performance tiers using identical cut-off boundaries (1.00–2.33 = Low; 2.34–3.66 = Moderate; 3.67–5.00 = High).

Autism Behavior Assessment Scale (ABAS). Autism severity was measured using the Autism Behavior Assessment Scale (ABAS), a standardized instrument developed by Diken, Diken, and Isik (2025). The scale was developed based on a large national sample consisting of 1,275 individuals from 14 cities in Türkiye. Exploratory factor analysis revealed a four-factor structure consisting of 36 items: Restricted/Repetitive Behaviors and Sensory Sensitivity, Social Interaction, Social Communication, and Atypical Speech Development. The four factors together explain approximately 63% of the total variance. Confirmatory factor analysis indicated good model fit: $\chi^2/df \approx 3.1$, CFI = .95, TLI = .94, RMSEA = .052, and SRMR = .046. Internal consistency values were also high: Total scale: Cronbach's $\alpha = .96$ and Subscales: $\alpha = .88 - .94$. McDonald's omega coefficients ranged between .89 and .95, further supporting reliability. Criterion validity analyses demonstrated moderate to high correlations with other standardized

autism measures ($r \approx .62 - .79$). These findings indicate that ABAS is a valid and reliable instrument for assessing autism-related behaviors in individuals aged 3–24 years.

Social Interaction Assessment Instrument (SIAI-TV). Children's social interaction behaviors were assessed using the SIAI-TV, the Turkish adaptation of the Autism Screening Instrument for Educational Planning, adapted by Aksoy and Diken (2016). The instrument is based on a structured observation procedure in which children's behaviors are coded across 48 equal observation intervals. At the end of each 10-second interval, the child's behavior is categorized into one of several behavioral categories, including: Interaction, Independent play, Non-responsiveness, and Negative or aggressive behaviors. The total number of observations within each category is then converted into standardized scores representing typical interaction and autistic interaction patterns. The reliability of the instrument has been reported as $KR-21 = .83$, indicating acceptable internal consistency for assessing social interaction patterns in autistic children. In the present study, after the 10–15 minute mother–child interaction session used for the MBRS-TV and CBRS-TV assessments was recorded, the SIAI-TV protocol was applied to the same interaction context in accordance with the administration guidelines.

Procedure

Data collection consisted of two stages. First, descriptive and demographic data were collected through an online survey distributed via Google Forms. Parents from different regions of Türkiye were invited to participate through social media and institutional networks. Second, observational interaction data were collected in special education and rehabilitation centers located in Eskişehir and Konya. Mothers and their children participated in structured play sessions in designated playrooms. During these sessions, mother–child interactions were video-recorded and later coded using the relevant assessment instruments. Participation in the interaction sessions was voluntary, and families were informed about the study procedures before providing written consent.

Data Analysis

Descriptive statistics, including frequencies, percentages, means, and standard deviations, were calculated to summarize demographic characteristics and screen use patterns. To examine

relationships among variables, correlation and multiple regression analyses were conducted. While our underlying framework utilizes a correlational structure to capture bivariate relationships and multiple regressions to assess predictors, alternative structural analyses like Structural Equation Modeling (SEM) could theoretically model these multiple dependent and independent pathways simultaneously while controlling for known confounders. However, because the observational interaction protocols (MBRS-TV, CBRS-TV, SIAI-TV) were administered to a smaller subsample ($n = 102$) compared to the full survey sample ($n = 784$), executing a comprehensive, full-scale structural equation model across all parameters was statistically constrained due to sample size limitations within the nested dyadic observations. Consequently, traditional correlation and targeted multiple regression frameworks were retained to maintain statistical power and clarity.

Reliability Audit: As the ABAS was recently developed by members of the present authorship team (Diken, Diken, & Isik, 2025), several control measures were implemented to ensure scientific independence: all observational videos were coded by independent raters who were completely blind to the children's quantitative ABAS survey scores, and the psychometric scale validation was executed utilizing an external national normative sample. For the coding of mother-child interaction videos, three trained coders participated. Two coders were members of the research team, and the third was an independent doctoral-level special education researcher who was kept entirely blind to both the survey results and the other coders' marks. A random 40% sample of videos was coded independently. While the historical Miles and Huberman (1994) percentage formula yielded an absolute agreement coefficient of 100%, we also calculated chance-corrected inter-rater reliability metrics to ensure absolute statistical rigor for the Likert observational ratings. Intraclass Correlation Coefficients (ICC, two-way mixed effects, absolute agreement) reached outstanding reliability across scales: $ICC = .94$ for the MBRS-TV, $ICC = .95$ for the CBRS-TV, and a weighted Cohen's Kappa = .91 for the SIAI-TV interval behaviors, confirming high coder calibration.

Multiple Comparison Correction: Because multiple concurrent bivariate correlations were executed across various screen dimensions, clinical indicators, and observational subscales, a Bonferroni correction was applied to control the inflation of the familywise error rate. For our

core interaction matrix comprising 21 primary hypotheses, the alpha significance threshold was strictly adjusted to α (corrected) = .0024 ($\alpha = .05 / 21$).

Qualitative Synthesis Method: To analyze the open-text parent feedback regarding behaviors observed during screen use, a formal Thematic Analysis approach was executed following the systematic framework of Braun and Clarke (2006). Open-text text responses from N = 342 parents who filled out the optional open ended questionnaire field were extracted. Two researchers independently performed line-by-line initial open coding, grouping codes into broader initial categories through iterative comparison until data saturation was reached (i.e., when no new conceptual codes emerged). Discrepancies were resolved through team consensus to achieve final theme definitions.

Results

Screen Use Patterns Among Children with ASD and Parental Observations During Screen Use

The first hypothesis examined the patterns of screen use among autistic children and their parents (see Table 1). Descriptive statistics indicated that children's average daily screen exposure was 2.13 hours (SD = 2.09). Parental screen use was also relatively high; mothers reported an average daily screen use of 2.76 hours (SD = 2.21), whereas fathers reported the highest average at 4.43 hours (SD = 3.50). Correlation analyses, also displayed in Table 1, revealed that maternal screen use was positively and significantly associated with children's screen exposure ($r = .231$, $p < .01$). Paternal screen use also showed a significant, though weaker, positive relationship with children's screen exposure ($r = .124$, $p < .05$). These findings suggest that family digital media habits may influence children's screen exposure.

Table 1. Descriptive Statistics and Correlations for Screen Use and Media Content Preferences

Variable / Content Type	M or %	SD	1	2
Screen Use (Hours/Day)				
1. Child Screen Exposure	2.13	2.09	—	
2. Maternal Screen Use	2.76	2.21	.231**	—
3. Paternal Screen Use	4.43	3.50	.124*	.000
Media Content Type (%)				
Cartoons	32.5%	—	—	—
No Regular Video Content	21.1%	—	—	—
General Videos	18.9%	—	—	—
Educational Videos	13.3%	—	—	—
Music Videos	11.0%	—	—	—
Gaming Videos	5.6%	—	—	—
Cooking Videos	2.8%	—	—	—
Documentaries	2.3%	—	—	—

Note. *M* = mean; *SD* = standard deviation. Content type percentages represent the proportion of children viewing each media category. The correlation between maternal and paternal use was not provided in the text. * $p < .05$. $p < .01$.

Regarding media preferences, the data presented in Table 1 indicated varying proportions of content types viewed by the children. Cartoons were the most frequently viewed media content (32.5%), followed by general videos (18.9%), educational videos (13.3%), and music videos (11.0%). Smaller proportions of children watched gaming videos (5.6%), cooking videos (2.8%), and documentaries (2.3%). Additionally, 21.1% of parents reported that their children did not regularly watch video content.

Qualitative responses from parents revealed several behavioral patterns observed during screen use. Four main themes emerged: (1) positive emotional responses, (2) disengagement from the surrounding environment, (3) behavioral stimulation and hyperactivity, and (4) reduced social communication. Many parents reported that screen use generated positive emotional reactions. For example: “*When the tablet is turned on, he becomes very happy and watches attentively for a long time.*” (P12). Similarly, another parent reported that technology sometimes helped regulate

their child's emotions: "*When he becomes restless, turning on cartoons helps him calm down.*" (P37). However, parents also frequently described reduced environmental awareness during screen use: "*When he holds the device, he disconnects from the world. Even when we call his name, he does not respond.*" (P45). Overall, 51.2% of children appeared happy during screen use, while 35.9% appeared disengaged from the surrounding environment, 21.9% displayed hyperactive behaviors, and 20.3% showed irritability or restlessness.

Autism Severity and Its Relationship with Screen Use

The second hypothesis examined the severity levels of autism symptoms across various dimensions using the Adaptive Behavior Assessment System (ABAS). As shown in Table 2, the social communication dimension yielded the highest average score ($M = 100.07$, $SD = 22.85$), suggesting performance close to the normative mean, though with high variability among participants. This was followed by developmentally atypical speech ($M = 95.27$, $SD = 11.72$) and restricted and repetitive behaviors ($M = 94.18$, $SD = 12.75$). The overall ABAS score averaged 92.56 ($SD = 14.76$), while the social interaction dimension presented the lowest average performance ($M = 92.50$, $SD = 15.74$), indicating slightly lower social interaction performance relative to normative expectations. In terms of clinical support categories, the majority of children fell into the "possible risk" classification (41.75%), followed by "support needed" (27.18%), "substantial support needed" (24.27%), and "very substantial support needed" (6.80%).

The third hypothesis evaluated the relationship between screen exposure habits and autism symptom severity. Pearson correlation analyses revealed a moderate, significant positive relationship between daily screen exposure and overall ABAS scores ($r = .41$, $p < .01$), demonstrating that higher screen exposure was linked with greater symptom severity. When evaluating specific devices, tablet use was significantly associated with autism severity ($r = .36$, $p < .01$), while television viewing demonstrated a weaker, yet significant relationship ($r = .28$, $p < .05$).

Table 2. Descriptive Statistics for ABAS Dimensions and Classifications of Support Needs

Variable	M or %	SD
ABAS Dimension Scores		
Social Communication	100.07	22.85
Developmentally Atypical Speech	95.27	11.72
Restricted and Repetitive Behaviors	94.18	12.75
Overall ABAS Score	92.56	14.76
Social Interaction	92.50	15.74
Support Needs Classification (%)		
Possible Risk	41.75%	—
Support Needed	27.18%	—
Substantial Support Needed	24.27%	—
Very Substantial Support Needed	6.80%	—

Note. *M* = mean; *SD* = standard deviation. ABAS = Adaptive Behavior Assessment System. Standardized normative scores have a conceptual mean of 100 and a standard deviation of 15.

To further evaluate these associations, a multiple regression analysis was conducted to assess whether screen habits predicted autism severity (see Table 3). The overall regression model was statistically significant, $F(3, 96) = 8.72$, $p < .001$, accounting for 21% of the variance in autism severity scores ($R^2 = .21$). Daily screen exposure emerged as the strongest unique predictor within the model ($\beta = .34$, $p < .01$), followed significantly by tablet use ($\beta = .27$, $p < .05$). Television viewing did not surface as a significant independent predictor of autism severity ($\beta = .15$, $p > .05$).

Table 3. Multiple Regression Predicting Autism Severity from Screen Media Modalities (n=102)

Predictor	β	<i>t</i>	<i>p</i>
Daily Screen Exposure	.34	3.12	< .0024
Tablet Use	.27	2.45	.016
Television Viewing	.15	1.38	.171

Note: Under the strict Bonferroni-corrected alpha threshold ($\alpha = .0024$), total daily screen exposure remains the only standalone statistically significant predictor of autism severity scores in the model.

Maternal and Child Interaction Profiles

Observational metrics from the mother–child interaction sessions (n=102) were categorized into low, moderate, and high ordinal tiers using the standardized 1.00–2.33, 2.34–3.66, and 3.67–5.00 score boundaries. Profiles for both mothers (MBRS-TV) and children (CBRS-TV) are outlined in Table 4.

Table 4. Observational Distribution Profiles for Mother–Child Interaction Tiers (n=102)

Dimension	Low Tier (%) (1.00 - 2.33)	Moderate Tier (%) (2.34 - 3.66)	High Tier (%) (3.67 - 5.00)
Maternal Behaviors			
(MBRS-TV)			
<i>Responsiveness</i>	28%	46%	26%
<i>Affect (Emotional Expressiveness)</i>	24%	49%	27%
<i>Achievement-Oriented / Directiveness*</i>	31%	44%	25%
Child Behaviors (CBRS-TV)			
<i>Attention Behaviors</i>	30%	45%	25%
<i>Initiation Behaviors</i>	34%	41%	25%
<i>Overall Interaction</i>	29%	47%	24%

*Note: Findings for the Achievement-Oriented/Directiveness subscale must be interpreted with high caution due to an internal consistency value below standard thresholds ($\alpha = .61$).

As seen in Table 4, results showed that 28% of mothers demonstrated low levels of responsiveness, 46% moderate levels, and 26% high levels. For the affect dimension, 24% of mothers were classified as low, 49% moderate, and 27% high emotionally expressive. Similarly, achievement-oriented/directive behaviors were mostly observed at moderate levels, with 31% low, 44% moderate, and 25% high scores. These results indicate that most mothers displayed moderate levels of interaction behaviors, with relatively fewer mothers demonstrating consistently high levels of responsive interaction. Results also indicated that 30% of children

demonstrated low levels of attention behaviors, 45% moderate levels, and 25% high levels. Similarly, initiation behaviors were low in 34% of children, moderate in 41%, and high in 25%. When overall interaction behaviors were examined, 29% of children were classified as low, 47% moderate, and 24% high. These findings suggest that autistic children generally demonstrate moderate levels of interaction behaviors, while high levels of interaction engagement remain relatively limited.

Pearson correlation analyses addressing **H4** demonstrated that maternal responsiveness was positively associated with children's attention behaviors ($r = .38$, $p < .001$, maintaining significance under Bonferroni correction). Maternal emotional expressiveness was positively linked to child interaction initiation ($r = .34$, $p = .003$), and achievement-oriented behaviors correlated with child overall interaction scores ($r = .27$, $p = .022$).

Regarding social interaction behavior assessments via the SIAL-TV (**H5**), autistic interaction behaviors yielded a higher overall observation mean ($M = 3.02$) compared to typical social interaction behaviors ($M = 2.47$). Distribution analyses indicated that 44% of children displayed moderate levels of autistic interaction behaviors, whereas typical social interaction behaviors were predominantly low (38%), with only 22% scoring in the high tier.

Interrelationships Among Main Study Variables

Analyses of social interaction behaviors indicated that autistic interaction behaviors had a higher mean score ($M = 3.02$) compared with typical social interaction behaviors ($M = 2.47$).

Distribution analyses showed that 44% of children displayed moderate levels of autistic interaction behaviors, while typical social interaction behaviors were predominantly observed at low levels (38%). Only 22% of children demonstrated high levels of typical social interaction behaviors, suggesting that many children experienced difficulties initiating and maintaining typical social interactions.

To address the final hypothesis, a comprehensive bivariate correlation matrix was calculated across screen profiles, clinician ratings, and dyadic observation data (Table 5).

Table 5. Bivariate Correlation Matrix for Screen Use, Autism Severity, and Interaction Metrics (n=102)

Variable	1	2	3	4	5	6	7
1. Daily Screen Exposure	—						
2. Autism Severity (ABAS)	.41**	—					
3. Maternal Responsiveness	-.26	-.18	—				
4. Maternal Affect	-.24	-.15	.52**	—			
5. Child Attention (CBRS-TV)	-.34*	-.31*	.38**	.29	—		
6. Child Initiation (CBRS-TV)	-.29	-.28	.31*	.34*	.48**	—	
7. Autistic Interactions (SIAI)	.37**	.45**	-.21	-.19	-.39**	-.42**	—

* $p < .0024$ (Bonferroni-corrected threshold), ** $p < .001$

Device-specific analyses further revealed that tablet use was negatively associated with typical social interaction behaviors ($r = -.28$, $p = .012$) and smartphone use was negatively associated with children's attention levels ($r = -.30$, $p = .008$); however, these device-specific sub-correlations did not meet the conservative Bonferroni-corrected threshold ($\alpha = .0024$) and must be interpreted as tentative trends.

Social Interaction Behaviors of Children with ASD and Relationships Among Screen Use, Parent–Child Interaction, and Social Interaction Behaviors

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Discussion

The present study examined screen use patterns among autistic children and explored how these patterns relate to parent–child interaction and children’s social interaction skills. The findings indicated that autistic children were exposed to digital media for an average of approximately two hours per day. Furthermore, children’s screen use was positively associated with both maternal and paternal screen use. These findings suggest that children’s digital media habits are embedded within broader family media environments. In addition, research on problematic media use suggests that excessive screen engagement in children may display characteristics similar to addictive behavioral patterns, including preoccupation with digital media and difficulties disengaging from screen-based activities (Domoff et al., 2019).

Because this study adopted a cross-sectional correlational design, it is critical to interpret all observed relationships through an associational rather than a directional lens, explicitly accounting for the possibility of reverse causation across our core findings. For instance, while high screen exposure co-occurred significantly with higher autism-related behavioral characteristics, this correlation does not imply that screen exposure directly amplifies autism severity. Instead, a reverse-causal interpretation is highly plausible: children with more pronounced social-communication challenges or repetitive behavioral profiles may demonstrate an affinity for predictable, structured, and visually repetitive digital platforms, leading parents to introduce screens more frequently to support daily routines. Similarly, the negative association between child screen exposure and observational interaction quality (e.g., child attention and initiation) may be driven by multiple transactional directions. Excessive screen exposure might compete with face-to-face family engagement (technofence); conversely, families experiencing highly complex interactive or regulatory challenges may turn to digital media as a necessary and effective situational coping strategy to manage child distress or provide sensory calming. Our qualitative data strongly support this dual reality, showing that while screens can lead to environmental disengagement, they frequently serve a non-compulsive, adaptive calming function for the child during moments of restlessness. Therefore, family screen use shouldn't be framed uniformly as a behavioral problem to eliminate, but rather evaluated based on whether the use is distressing or serving a clear regulatory function within the household.

Previous research has consistently demonstrated that children's screen use behaviors are closely related to parental media practices and the overall family media ecology (McDaniel & Radesky, 2020; Radesky et al., 2020). Parents often model technology use patterns that children subsequently adopt, and family routines surrounding technology may shape children's exposure to digital media. In families of autistic children, digital media may also serve additional functions, such as managing behavioral challenges or supporting emotional regulation in daily caregiving contexts. Qualitative findings from parental reports further illustrated this dynamic. Many parents indicated that digital media sometimes helped calm their children or sustain their attention. Similar observations have been reported in previous studies, which suggest that parents of autistic children may use digital devices as tools for behavioral management or emotional regulation (McDaniel & Radesky, 2018). However, such practices may also reduce opportunities for direct social interaction between parents and children.

Another important finding of the study was the positive association between children's screen exposure and autism symptom severity. Higher daily screen exposure was associated with higher autism-related behavioral scores. In addition, tablet use was more strongly associated with autism severity than television viewing. These findings align with previous studies suggesting that autistic children often show strong preferences for screen-based media environments (Mazurek & Wenstrup, 2013). Digital platforms frequently provide predictable, repetitive, and visually stimulating experiences, which may align with the cognitive and behavioral preferences commonly observed in individuals with autism. More recent research has also suggested that increased exposure to screen-based media may be associated with behavioral and developmental outcomes in autistic children (McDaniel & Radesky, 2018). However, it is important to interpret these relationships cautiously. The present study employed a cross-sectional design, which limits causal interpretations. It is possible that children with higher levels of autism-related characteristics are more likely to engage in screen-based activities, rather than screen exposure causing increased autism symptoms.

The findings also highlighted the critical role of parent-child interaction in children's social and behavioral outcomes. Maternal responsiveness and affect (emotional expressiveness) were positively associated with children's attention behaviors and interaction initiation during mother-child interaction sessions. These findings are consistent with earlier research demonstrating that

responsive parenting and emotionally supportive interaction environments contribute significantly to social communication development in autistic children (Siller & Sigman, 2008). Parent–child interaction represents a key context in which children develop joint attention, language skills, and social reciprocity. Recent studies have also emphasized that disruptions in parent–child interaction caused by digital technology use may interfere with children’s opportunities for social engagement and communication (Radesky & Christakis, 2016; McDaniel & Radesky, 2018). The present findings extend this literature by showing that higher levels of responsive parenting are associated with lower levels of children’s screen exposure. These results suggest that strengthening parent–child interaction quality may support children’s social development and reduce reliance on digital devices as tools for behavioral management.

The study further revealed that higher levels of screen exposure were associated with lower levels of attention, interaction initiation, and overall interaction performance. Additionally, screen exposure was positively associated with autistic interaction behaviors. These findings are consistent with research suggesting that excessive screen exposure may reduce opportunities for social interaction and experiential learning during early childhood (Madigan et al., 2019; Stiglic & Viner, 2019). For autistic children, who already experience challenges in social communication, reduced opportunities for live interaction may further limit the development of essential social skills. At the same time, parents reported that digital media sometimes supported certain developmental outcomes. Some children reportedly learned songs, basic concepts, imitation behaviors, and simple communication expressions through digital media content. These findings are consistent with research suggesting that technology can support learning when used intentionally and in structured ways (Odom et al., 2015). Therefore, the developmental implications of digital media use may depend not only on-screen time but also on the quality of content, parental involvement, and the context of media use.

This study contributes to the growing literature on digital media use in children with ASD by integrating screen use, autism severity, parent–child interaction, and children’s social interaction skills within a single analytical framework. Previous studies have typically examined screen exposure as an isolated behavioral variable. In contrast, the present study highlights the importance of considering family interaction processes when interpreting the developmental implications of digital media use. The findings support an ecological perspective in which

children's developmental outcomes emerge from dynamic interactions between individual characteristics and family relational environments (Bronfenbrenner & Morris, 2006). The observed relationships between screen use, parental interaction behaviors, and children's interaction competence suggest that digital media exposure may influence developmental outcomes both directly and indirectly through family interaction processes.

The findings of the study also have several practical implications for families, educators, and professionals working with autistic children. First, interventions addressing digital media use should focus not only on limiting screen time but also on promoting balanced media routines that encourage face-to-face interaction and shared activities between parents and children. Second, parent education programs may play an important role in helping families develop strategies for managing children's screen use. Crucially, given that paternal screen use hours were found to be significantly associated with the child's media profiles, home-based media interventions must actively engage fathers alongside mothers to build cohesive, whole-family digital routines rather than focusing exclusively on maternal behaviors. Providing guidance on appropriate media content, co-viewing practices, and structured media routines may help families use digital media in ways that support children's learning and development. Third, strengthening parent-child interaction should be considered a central component of interventions designed for autistic children. Programs that encourage shared play, joint attention, and responsive communication may simultaneously support children's social development and reduce excessive reliance on digital devices. Finally, clinicians and educators should consider the broader family media environment when assessing children's screen use behaviors, carefully distinguishing between positive, regulatory screen use and compulsive or distressing patterns.

Limitations and Future Research Directions

Despite the contributions of the present study, several limitations should be acknowledged. First, the study employed a cross-sectional correlational design, which limits the ability to draw causal conclusions about the relationships between screen use, autism severity, parent-child interaction, and children's social interaction skills. Although significant associations were observed among these variables, directionality cannot be determined. Future research employing longitudinal or experimental designs would be valuable in clarifying the directionality of these relationships.

Second, the strong positive correlation observed between child screen exposure and autism severity ($r = .41$) was derived from two parent-reported instruments (the online demographic form and the ABAS survey) completed by the same primary caregiver. This introduces the limitation of common method variance (CMV), which can artificially inflate correlation coefficients due to shared source variance. Notably, our observational dyadic findings (MBRS-TV and CBRS-TV) are less susceptible to this bias because they rely on external, independent video coders. Future research should aim to collect clinical metrics from multi-informant sources (e.g., teacher reports or independent clinical observations) to minimize shared source variance.

Third, although the overall sample size was relatively large, the observational interaction data were obtained from a smaller subsample of participants. This limitation may restrict the generalizability of findings related to observed parent–child interaction behaviors. Future studies should consider collecting observational interaction data from larger and more diverse samples to strengthen the robustness of these findings.

Fourth, our empirical data demonstrated that fathers' screen use hours ($M = 4.43$ hours) were nearly double those of mothers ($M = 2.76$ hours). However, our observational evaluation of parent–child engagement was strictly limited to mother–child dyads. Because paternal technology patterns represent a major segment of the child's home ecology, future replication studies must explicitly integrate observational tracks with fathers to compare maternal and paternal interaction configurations and their comparative buffering impacts on child screen media consumption.

Fifth, findings relating to the Maternal Behavior Rating Scale (MBRS-TV) Achievement-oriented/directiveness subscale must be interpreted with extreme caution, as its internal consistency fell below the standard psychometric threshold of .70. Future studies should consider using alternative or expanded structural tools to replicate these specific interactional components.

Sixth, the study was conducted within a specific cultural and national context, which may limit the generalizability of the findings to other cultural environments. Family technology practices, parenting styles, and access to digital media may vary across societies. Therefore, cross-cultural research is needed to examine whether similar patterns emerge in different sociocultural contexts.

Finally, although the present study examined several key variables, other potentially relevant factors were not included in the analyses. For example, variables such as socioeconomic status, parental stress, parental digital literacy, and the specific content and context of media use may also influence children's developmental outcomes. Future research incorporating these contextual factors may provide a

more comprehensive understanding of the complex relationships between digital media use and developmental processes in autistic children.

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“Statements and Declarations”

Ethics approval and consent to participate

The study was conducted in accordance with the principles of the Declaration of Helsinki, and the research protocol was approved by the Ethics Committee of Anadolu University (*Approval Code: 732353; Approval Date: May 28, 2024*). Written informed consent was obtained from all participating parents. For participants under the age of 16 years, written informed consent was obtained from their parents or legal guardians prior to participation.

Clinical trial number

Not applicable.

Consent for publication

Not applicable.

Availability of Data and Material

The data are available from the corresponding author upon reasonable request.

Competing interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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