The impact of digital media on play activity in preschool children: A psychological study[1]

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Abstract
In the context of intensive mediatization of childhood, children's consumption of digital media from an early age has become a widespread phenomenon, causing concern among parents and educators. This study focused on analyzing the intensity of digital media consumption as a factor potentially leading to negative changes in play activities and social interactions among preschool children. The study involved over 500 children and their parents. The results indicate that prolonged screen time is associated with characteristics such as lack of emotional attachment to toys, reliance on media trends when selecting toys, and rapid loss of interest in them. However, the assumption that children's lack of familiarity with current media narratives leads to peer rejection or inability to participate in joint play based on animated films or digital games was not supported.

Keywords
Mediatization of childhood, screen time, play, sociometric status, preschool age.

Introduction
In the context of intensive digitalization of childhood, preschoolers' consumption of digital media has become ubiquitous and pronounced. Video viewing and

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digital games are rapidly becoming preferred activities for children, driven not only by their high sensory appeal and interactivity (Edwards, 2014; Buzina et al., 2024; Lakicevic et al., 2025) but also by the targeted design of digital products for child audiences and their active marketing promotion (Marsh, 2017). Screen time duration is steadily increasing, raising justified concerns in the scientific community due to accumulated data on its potential negative impact on cognitive and emotional development (Lakicevic et al., 2025). Importantly, the negative effects are mediated not by screen time itself but by the displacement or transformation of traditional activities with developmental potential, such as play, reading, creativity, and live communication (Bergmann et al., 2022). This study aimed to investigate the potential impact of the mediatization of childhood on play activity – the leading activity in preschool age (Vygotsky, 2016; Bukhalenkova, & Chichinina, 2023; Larin, & Sadovnikova, 2024).

Theoretical background

Mediatization of childhood

The mediatization of childhood represents a comprehensive sociocultural process of integrating media and digital technologies into the daily lives of children, leading to a transformation of traditional practices of socialization, learning, and development (Krotz, 2024; Livingstone et al., 2019; Dunas et al., 2024). This process is characterized not merely by an increase in the quantity of media in children's lives, but by a fundamental change in the ways they interact with the world, form their identity, and build social relationships (Marsh et al., 2019; Fan, Luo, & Chan, 2025).

In the context of preschool age, mediatization acquires particular significance, as it coincides with a sensitive period for the development of key cognitive, social, and emotional competencies (Vygotsky, 2016). Contemporary research demonstrates that by the age of 6, most children in developed countries actively use various digital devices, with screen time significantly exceeding recommended guidelines (Common Sense Media, 2021). This is driven by both the accessibility of digital technologies and changes in parenting practices, where media are increasingly used as a means of organizing children's leisure and learning (Plowman, 2015).

The theoretical understanding of the mediatization of childhood is approached through several complementary theoretical frameworks. Bronfenbrenner's ecological systems theory allows for the analysis of mediatization as a process permeating all levels of child development: from the microsystem (family practices of using digital devices) to the macrosystem (cultural and economic factors determining the production and distribution of children's content (Bronfenbrenner, 1999). Vygotsky's sociocultural approach emphasizes media as cultural tools that mediate children's psychological development (Vygotsky, 2016). In this context, the concept of mediation acquires particular importance, describing how adults and peers help children make sense of media content (Clark, 2011).

The complexities of researching the mediatization of childhood are associated with the rapid obsolescence of research tools, the need to account for numerous contextual factors, ethical issues related to studying children's digital practices, and the interdisciplinary nature of the field. Indeed, the first quarter of the 21st century has witnessed a fundamental shift in how media are embedded in children's lives and activities (Livingstone et al., 2019). Whereas early research could operationalize media exposure as an isolated variable, for example time spent watching a specific TV program, today the integration of media into the child's lifeworld cannot be so precisely operationalized. The issue is not simply an increase in the number of screens, or the volume of content consumed by the child; it is a qualitative change in the very nature of the interaction.

Media have ceased to be a separate activity and have become a "habitat" or environment (Livingstone, 2019; Marsh et al., 2019; Kruzhkova et al., 2024; Wei, & Ong, 2025). For instance, early models were based on the child's active and purposeful attention to media (e.g., a child sitting down to watch a cartoon). Today, a significant portion of media exposure is background in nature (Christakis, & Hale, 2025). A television playing in the background, advertising screens in public spaces, and music all exert a cumulative and implicit influence. This transformation can also be observed in how children's play has become intertwined with media consumption (Rubtsova, & Salomatova, 2022). Most modern toys are not just dolls or figures, but characters from animated series, complete with YouTube channels, mobile applications, and online games. By playing with such a doll, the child interacts with an entire media narrative. Thus, the mediatization of childhood is a complex, distributed, hybrid, and context-dependent phenomenon. Understanding its mechanisms and consequences requires a comprehensive approach that integrates theories from various fields of knowledge and accounts for the dynamic nature of children's interaction with the digital environment.

While the psychological effects of screen time are widely studied, this research contributes to the sociology of media and childhood studies by investigating how media consumption transforms not just individual behaviors, but the fundamental cultural practice of play. We examine play as a mediator between the macro-level forces of the media industry (marketing, narratives) and the micro-level outcomes in child development. Thus, this study speaks directly to core questions in media studies about the incorporation of media into everyday life, the commercialization of childhood culture, and the formation of shared media-based social codes among peers.

Screen time

Screen time represents the most frequently used quantitative indicator of the intensity of childhood mediatization in research (Sigman, 2012). The scientific literature commonly distinguishes several types of screen time based on various classification criteria (Sweetser et al., 2012). Based on the nature of interaction with content, passive screen time (watching videos, TV programs) and active screen time (using interactive applications, video games) are distinguished. According to the social context, individual and co-use/co-viewing screen time (watching or using devices together with parents or peers) are differentiated. Based on content, educational, entertainment, and mixed screen time are identified (Council on Communications and Media, 2016).

Meta-analytic studies demonstrate the ambiguous influence of screen time on the development of preschool children. On the one hand, prolonged passive screen time (more than 1-2 hours per day) is associated with negative consequences for cognitive development, including reduced executive functions, attention, and language abilities (Madigan et al., 2020). Associations have also been noted between excessive screen time and problems in the socio-emotional domain, including difficulties with emotion regulation and reduced empathy (Twenge, & Campbell, 2018). On the other hand, educational screen time of moderate duration can have a positive impact on the development of early literacy and mathematical understanding. An important moderator of the influence of screen time is the social context: co-viewing and discussing content with parents mitigates potential negative effects and promotes learning transfer (Barr et al., 2020).

Play in the context of the mediatization of childhood

A significant body of empirical evidence confirms the positive role of play in the development of self-regulation, language, social skills, and other key competencies in preschool children (Gavrilova et al., 2023; Bukhalenkova, & Chichinina, 2023; Fleer, 2022). Play represents a symbolic modeling of reality, through which children recreate familiar social relationships and norms (Vygotsky, 2016; Veraksa, 2022). The structure of play includes the following components: *plot* – the aspect of reality recreated in play (e.g., playing hospital); *content* – specific actions and relationships between characters (e.g., the process of treating patients); *roles* – generalized behavioral models corresponding to specific situations (e.g., the role of a kind doctor); *rules* – prescriptions dictated by the role or established by participants (e.g., the sequence of actions during a patient visit); and finally, *play actions* – specific symbolic actions performed in accordance with the role (Elkonin, 1966; Smirnova, & Ryabkova, 2010).

The plot, roles, and content of play naturally reflect the socio-cultural context and are therefore subject to change (Elkonin, 1966). Consequently, play activity can significantly transform under the influence of changing childhood conditions. In the context of mediatization, this influence manifests itself, on the one hand, in a reduction of time devoted to play, and on the other hand, in the fact that play content increasingly revolves around recreating popular media narratives and actions of animated film characters (Gavrilova et al., 2023). Relying on ready-made narratives may limit children's ability to independently create original plots but can also foster a shared context and serve as a basis for joint play with peers (Hinkley et al., 2018). At the same time, there is a widespread concern that children unfamiliar with current media narratives and characters may be excluded from play interactions due to their inability to support popular plots.

In addition to the transformation of play itself, the associated children's toy industry is also undergoing mediatization (Marsh, 2017; Plowman, & Luckin, 2004). Toys serve simultaneously as objects of play, elements of cultural context, and products of the global entertainment industry (Mertala et al., 2016; Stephen, & Edwards, 2017). The digitalization of the toy market leads to the instantaneous spread of trends that displace more traditional children's toys (Marsh, 2017). Digital trends are quickly embodied in physical objects and permeate children's play through active marketing and commercialization of the toy industry.

Individual toys popularized by the media environment achieve viral prevalence among children (Adachi, & Willoughby, 2017; Edwards et al., 2017). However, many such toys not only fail to meet the age-related needs and developmental tasks of children but may also diminish the developmental potential of play by limiting children's autonomy and initiative in creating play narratives. To illustrate this point, a study analyzing children's toy preferences showed that the motivation for choosing trendy toys was largely unrelated to play intent but was determined by external characteristics and their popularity in the media environment (Gavrilova et al., 2023).

Sociometric status as an indicator of play involvement

Sociometric status, in the context of developmental psychology, reflects a child's ability to function successfully within a social group, establish and maintain positive relationships with peers, and participate effectively in joint activities (Rubin et al., 2015). The number of choices a child receives from peers as a preferred play partner is of interest not only as an indicator of social competence but also as a measure of the play experience of a preschool-aged child (Cillessen, & Marks, 2017).

A child's play involvement might be linked to their sociometric status because play competencies, such as the ability to generate attractive play narratives, flexibly change roles, and resolve play conflicts enhance the child's value as a potential play partner (Bukhalenkova, & Chichinina, 2023). Furthermore, children with high sociometric status gain more opportunities to participate in complex forms of play, creating a positive feedback loop for the development of their play and social competencies (Veraksa, 2022).

The methodology for assessing sociometric status in preschool age has its specificities. The most common approach is the use of a nomination method, where children are asked to identify preferred partners for various types of joint activities, such as play, task completion, or birthday celebrations (Cillessen, & Marks, 2017). The number of positive nominations received serves as an indicator of the child's sociometric status.

Within the context of the mediatization of childhood, the question arises of how changes in play activities associated with digitalization influence children's sociometric status. Some researchers express concern that a focus on individual interaction with digital devices may reduce children's interest in cooperative play and hinder the development of social skills (Twenge, & Campbell, 2018). Other authors point to the potential for positive influence through the creation of a shared cultural code and new themes for joint play (Fleer, 2022). Empirical data remain contradictory, underscoring the need for further research in this area.

This study aimed to empirically test the hypothesis that intensive digital media consumption is associated with negative characteristics of play and suboptimal toy selection strategies among preschool children. The key variables of digital media consumption included the duration of active and passive screen time.

Methods

Participants

The study involved 528 children (50.3% girls) aged 6 years (M = 6.75, SD = 0.33). The sample was formed using a continuous method from the population of several general education preschool institutions in Moscow, Russia. The inclusion criteria were informed consent from parents/legal guardians for the child's participation; the absence of diagnosed neurological or psychiatric disorders; and the absence of developmental disabilities significantly impairing understanding of instructions.

The study and consent procedures were approved by the Ethics Committee of the Faculty of Psychology, Lomonosov Moscow State University (approval number: 2024/0223), dated 27.04.2024. The primary ethical requirement was fulfilled by obtaining written informed consent from all parents/legal guardians. In addition, following child-friendly protocols, each child provided verbal assent after a researcher explained the procedures in an age-appropriate manner, ensuring their voluntary participation.

Measures

To assess children's digital media consumption, play characteristics, and toy preferences, a special parent questionnaire was developed. The survey included a block of questions aimed at measuring the child's screen time, differentiated into passive (video viewing) and active (gaming, video calls) use of digital devices, as well as calculation of total screen time. Specific play behaviors were assessed through statements capturing stability of play interests and toy preferences ("The child prefers to play with a specific type of toy", "Favorite toys change according to trends", "Loses interest in new toys on the same day", "Is emotionally attached to their toys"). To control for socio-demographic factors, the questionnaire included items on parental education level and subjective assessment of family material well-being.

Assessment of children's sociometric status within the peer group was conducted using Kolominsky's (1984) sociometric method. The procedure involved an individual interview aimed at identifying children's preferences for cooperative activities. Each child was asked two questions: (1) "Name three children from your class whom you would invite to your birthday party" and (2) "Name three children from your class whom you like to play with". Responses were anonymized using identification numbers. For both tasks, the number of peer nominations received by each child was recorded. Status categories were defined as follows: popular (≥5 nominations), average status (1–4 nominations), and rejected (0 nominations). The final sociometric status score was calculated based on both tasks. The procedure took approximately 10 minutes per child and was administered by trained researchers following a standardized protocol.

Statistical analyses were conducted using jamovi (Version 2.6) [Computer Software]. Partial correlation analysis was employed to examine relationships between study variables while controlling for socio-demographic indicators.

Results

The first step involved examining descriptive statistics (means, standard deviations) of the main variables (see *Table 1*). Analysis using partial Pearson correlation revealed consistent negative associations between parental education level and all digital media consumption indicators: passive ($r = -0.182$, $p < 0.001$), active ($r = -0.162$, $p < 0.001$), and total screen time ($r = -0.202$, $p < 0.001$).

Table 1

Descriptive statistics and correlations for study variables

	M	SD	1	2	3
Passive screen time (hours per week)	10.61	6.23	—		
Active screen time (hours per week)	5.82	6.61	0.529***	—	
Total screen time (hours per week)	16.54	11.37	0.865***	0.884***	—
Sociometric status	2.10	0.72	-0.067	0.003	-0.041
Prefers calm, structured games	3.63	1.33	-0.108*	-0.011	-0.058
Loses interest in new toys on the same day	1.83	0.78	0.198***	0.171**	0.210***
Favorite toys change depends on trends	2.17	0.91	0.224***	0.119	0.184**
Emotionally attached to their toys	2.87	0.84	-0.068	-0.130*	-0.135*
Parental education level	5.40	1.15	-0.182***	-0.162***	-0.202***

Note: controlling for Age and Gender; * $p < .05$, ** $p < .01$, *** $p < .001$

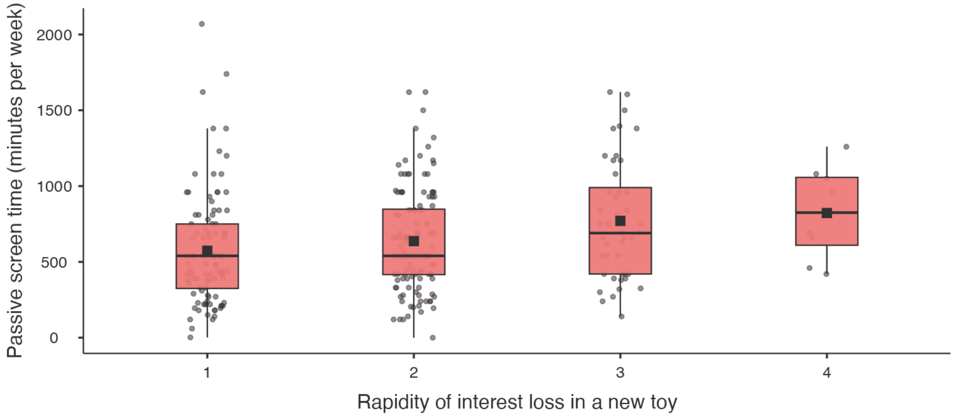
An Independent sample t-test was conducted to compare the scores of boys and girls on several variables. A significant difference was found in children's emotional attachment to their toys, with girls ($M = 3.07$, $SD = 0.73$) reporting significantly higher attachment than boys ($M = 2.70$, $SD = 0.89$); $t(294) = -3.86$, $p < .001$. A significant difference was also found for the 'Active' scale, with boys ($M = 381.92$, $SD = 441.10$) scoring higher than girls ($M = 302.35$,

$SD = 343.76$); $t(491) = 2.20$, $p = .028$. No statistically significant differences were found between boys and girls on the following variables: passive screen time, total screen time per week, the number of peer selections as a play partner, preference for quiet activities, rapid loss of interest in a new toy, the tendency for favorite toys to change with trends.

Given that preliminary analyses revealed significant gender differences in both screen time (specifically, active consumption) and several play-related indicators, partial Pearson correlations were conducted controlling for respondents' age and gender. This analysis revealed statistically significant relationships between digital media consumption indicators and characteristics of children's play activity. Specifically, the tendency for rapid loss of interest in new toys was positively associated with all types of media consumption: passive ($r = 0.198$, $p < 0.001$) (See *Figure 1*), active ($r = 0.198$, $p < 0.001$), and total screen time ($r = 0.210$, $p < 0.001$). Dependence of play preferences on media trends showed significant positive correlations with passive ($r = 0.224$, $p < 0.001$) and total screen time ($r = 0.184$, $p < 0.01$). Interest in calm, structured games was significantly negatively associated with passive screen time ($r = -0.108$, $p < 0.001$). The degree of emotional attachment to toys was significantly negatively correlated with active ($r = -0.130$, $p < 0.05$) and total screen time ($r = -0.135$, $p < 0.05$). Regarding the sociometric status of children in the peer group, no statistically significant relationships with screen time indicators were found ($p > 0.05$). However, at the trend level, a weak negative association was observed between passive screen time and the number of sociometric choices received by the child in the play partner selection task ($r = -0.062$, $p = 0.056$) (See *Figure 2*).

Figure 2

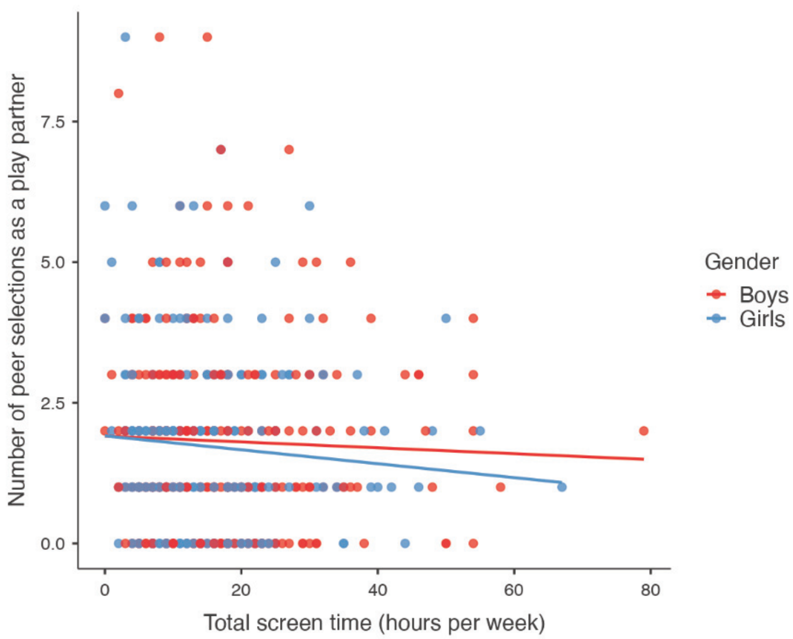
Passive screen time distribution across levels of rapid toy interest loss



Note: The variable "Rapidity of interest loss in a new toy" represents parental responses to the statement "The child loses interest in a new toy on the same day" on a scale from 1 (strongly disagree) to 4 (strongly agree).

Figure 2

Scatter plot of the number of sociometric choices received by the child as a play partner and total screen time



Discussion

The results of this study shed light on specific aspects of the transformation of play activity in the context of childhood mediatization (Bergmann et al., 2022). The obtained data confirm the research suggestion that active consumption of digital media by children can lead to negative effects that transform traditional play.

The significant relationships found in the study between screen time duration and such play behavior characteristics as rapid loss of interest in new toys, dependence on media trends when selecting toys, and reduced emotional attachment to them are consistent with the theoretical assumption about the negative impact of digital media on the structure and content of play activity in preschoolers. As emphasized in the works of Elkonin (1966), play represents a complex form of symbolic modeling of social reality, where the toy serves as a key means of implementing play ideas and embodying plots. The obtained data suggest that intensive consumption of digital media can transform the perception of toys: instead of being a tool for creative realization, they begin to be perceived as objects of temporary consumption. This confirms concerns about the negative impact of excessive and unregulated commercialization of the toy market on the quality of play in modern children (Smirnova, & Ryabkova, 2010; Veraksa, & Sukhikh, 2020). It is worth noting the differential influence of various types of screen time on play characteristics identified in the study. Passive consumption of media content demonstrated the most pronounced negative correlations with parameters of play behavior.

These findings can be considered as confirmation of the suggestion that ready-made media narratives limit children's opportunities for independent construction of play plots (Hinkley et al., 2018). Unlike passive consumption, active forms of digital device use, involving interaction, can provide children with variable models for plot construction and play development while maintaining an element of uncertainty and opportunities for creative choice. An important result is the absence of significant relationships between screen time indicators and children's sociometric status, including based on trials of peer selection of play partners. This indicates the preservation of the need for joint play in modern children regardless of digital media consumption. At the same time, the negative relationship at the trend level suggests that the common concern that children unfamiliar with current media narratives and characters may be excluded from play interactions due to their inability to support popular plots is not supported. At the trend level, an inverse relationship is observed, where children with maximum screen time are the least preferred among peers. In sum, the first hypothesis of the current study was supported. We found significant positive associations between screen time and negative play characteristics, including rapid loss of interest in toys, a preference for trendy media-linked toys, and reduced emotional attachment. The second hypothesis was not supported by the obtained data. Contrary to the assumption that children with low media exposure would be socially disadvantaged, we found no significant link between screen time and sociometric status.

The conducted study demonstrates the complex influence of mediatization on the play activity of preschool children, which fully aligns with theoretical conceptions of mediatization as a profound sociocultural process transforming childhood. The obtained results point to specific mechanisms through which digital technologies are altering traditional practices of socialization and development. From the perspective of Bronfenbrenner's ecological systems approach, the study's results demonstrate the influence of mediatization across all levels of the child's developmental ecosystem (Bronfenbrenner, 1999). The identified significant association between parental education level and children's screen time confirms the importance of family practices regarding digital device use as an element of the microsystem. More educated parents are likely more aware of the potential risks and opportunities of digital media, enabling them to establish a more balanced mediated environment (Clark, 2011). The absence of a significant link between screen time and sociometric status indicates the preservation of children's capacity for social adaptation within the preschool setting, despite intensive media consumption. This reflects the resilience of children's sociality and the effectiveness of socialization institutions at the mesosystem level. The dependence of play preferences on media trends reflects the influence of the global entertainment industry and marketing strategies on local practices of children's play, demonstrating the impact of macrosystemic factors.

From the standpoint of Vygotsky's sociocultural approach, digital media serve as contemporary cultural tools that mediate psychological development (Vygotsky, 2016). Prefabricated media narratives become psychological tools that shape the content and structure of children's play, manifesting in the predominance of reproductive scenarios over creative ones. Theoretically, co-use of media with adults could serve as an effective tool for development within the zone of proximal development; however, the obtained data indicate a deficit of high-quality mediation in most families.

The results underscore the critical importance of mediating digital experience, in line with Parental Mediation Theory (Clark, 2011). The identified negative effects are particularly pronounced with passive content consumption without adequate adult mediation, confirming the idea that the meaning of media content is constructed through social interaction rather than passively absorbed. This points to the necessity of developing mediation competence among parents and educators as a key condition for the positive adaptation of children to the realities of a mediatized childhood.

The theoretical significance of the study lies in its substantial contribution to the development of the theory of childhood mediatization. The results demonstrate that mediatization is not merely a technical phenomenon but a profound sociocultural process, the effects of which are indirectly reflected in children's play and consumer culture regarding the selection and use of toys.

Limitations

The present study has several limitations that should be considered when interpreting the results. First, the cross-sectional design of the study does not allow establishing causal relationships between variables. Second, the use of parent questionnaires may contain elements of social desirability bias and subjective assessment of children's behavior. Third, the sample was limited to children from Moscow preschool institutions, which limits the generalizability of the results to other regions and cultural contexts. Fourth, the study did not account for qualitative characteristics of the consumed media content, focusing primarily on quantitative indicators of screen time.

Conclusion

The present study yields several important conclusions regarding the influence of mediatization on the play activity of contemporary preschoolers. The findings indicate that this influence is complex and multifaceted, reflecting the nuanced ways digital media are integrated into early childhood development and daily routines. On the one hand, the empirical evidence suggests that prolonged interaction with digital devices, particularly in the form of watching video content (categorized as passive screen time) is associated with specific, observable changes in play behavior. Children with significant screen exposure tend to demonstrate a rapid loss of interest in new toys, weaker emotional attachment to them, and a marked preference for toys aligned with popular media trends. These behavioral patterns indicate that ready-made visual narratives and characters may constrain opportunities for independent creative development and the elaboration of self-generated play scenarios. This dynamic potentially transforms a toy from a tool for implementing a child's own ideas into an object of transient novelty, fostering a more consumer-oriented rather than creator-oriented relationship with play materials.

On the other hand, the study did not identify a significant association between the level of media consumption and a child's sociometric status within the peer group. This significant result indicates that the fundamental human need for direct social interaction and cooperative play remains robust, even within the context of intensive childhood mediatization. Furthermore, a child's capacity to build relationships, gain acceptance, and be perceived as an interesting partner in play does not appear to be determined primarily by their familiarity with current media content. This finding helps to mitigate common societal concerns that children who are less engaged with the dominant digital context may inevitably experience social isolation or peer rejection, suggesting instead that core social skills and personal characteristics retain their primary importance in peer-group dynamics.

Several promising directions for future research emerge from these findings. First, longitudinal studies are strongly recommended to move beyond correlations and establish causal connections, thereby investigating the long-term developmental effects of childhood mediatization. Second, a more refined and granular analysis of the qualitative parameters of media content—such as its narrative complexity, pacing, character development, and interactive demands—and their specific relationship with various cognitive and social aspects of children's play activity is necessary. Third, it appears particularly worthwhile to explore the educational and developmental potential of hybrid "phygital games" (physical + digital), which are considered by some researchers to effectively bridge digital and real-world play experiences, possibly offering a balanced model that leverages digital engagement while supporting tangible social interaction and creative manipulation.

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