The Use of Board Games and Digital Games by Preschoolers: Results of a Survey of Russian Parents

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The article presents the results of an empirical study conducted within "The Influence of Digital Activity on the Development of Cognitive Functions in Preschool Age" project. In order to compare the data on the use of board games and digital games, a special "Contemporary Children: Digital Games vs. Board Games" questionnaire was developed (O.V. Salomatova, Yu.A. Tokarchuk, 2023), intended for the parents of preschoolers. The survey was conducted from March to September 2023 and involved parents of children aged 3 to 7 years old (N=556). It was shown that parents consider board games to be a more preferable pastime for children than digital games. According to the survey, board games in most cases involve the presence of a gaming partner, while digital games are more often an individual activity. In comparison with board games, parents more frequently use digital applications as a means of monitoring their child's behavior or as a method of reward. At the same time, according to the survey, parents less often actively participate in the process of digital gaming, allowing children to play independently or under their supervision. Board games more frequently involve parents in the gaming process.

Keywords: board games; digital game; preschool age; game applications; media content.

Использование настольных и цифровых игр дошкольниками: результаты опроса российских родителей

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В статье представлены результаты эмпирического исследования, выполненного в рамках проекта «Влияние цифровой активности на развитие когнитивных функций в дошкольном возрасте». С целью сравнения данных по использованию настольных и цифровых игр была разработана специальная анкета «Современные дети: цифровые игры VS настольные игры» (О.В. Саломатова, Ю.А. Токарчук, 2023), предназначенная для родителей дошкольников. Анкетирование проводилось с марта по сентябрь 2023 года, в нем приняли участие родители детей 3-7 лет (N=556). Было показано, что родители считают настольные игры более предпочтительным времяпрепровождением детей, по сравнению с цифровыми играми. Согласно опросу, настольные игры в большинстве случаев предполагают наличие игрового партнера, тогда как цифровые игры чаще являются индивидуальным занятием. В отличие от настольных игр, родители гораздо чаще используют цифровые приложения в качестве средства контроля за поведением ребенка или метода поощрения. При этом, согласно опросу, родители реже принимают непосредственное участие в процессе цифровой игры, позволяя детям играть самостоятельно или под своим наблюдением. Настольные игры чаще включают родителей в игровой процесс.

Ключевые слова: настольные игры; цифровая игра; дошкольный возраст; игровые приложения; медиаконтент.

Digital and Board Games in the Focus of Scientific Research

Modern childhood is increasingly referred to as "digital" childhood [9]. A variety of digital devices become available to children from early childhood, and the time of interaction with them is steadily increasing. Children are also addressed a huge array of digital content, which combines a lot of information and entertainment materials designed for use on digital devices (computer, smartphone, tablet, etc.). One of the most common types of content addressed to preschool children is digital play [3; 4; 6]. According to a survey of Russian parents conducted in 2020, 24% of children by the age of 3 can play independently in gadgets, while 48% of preschoolers spend up to 1 hour daily at the device [5].

Issues related to the influence of screen time on various aspects of preschoolers' development are actively studied in the world science. Thus, the works of domestic and foreign researchers indicate that the reasonable use of digital games and their inclusion in the educational process can have a positive impact on the level of cognitive development of children (perception, visual and figurative thinking, logical thinking, cognitive activity), train working memory and develop attention [2; 13; 22].

However, the neglect of screen time norms is becoming a worldwide problem. Excessive early exposure and/or excessive use of digital devices can have a negative impact on physical health and psychosocial health, as well as cause problem behavior and impaired cognitive development [14]. The increased screen time of today's children and their active use of digital technology can negatively affect the quality of traditional play [5; 7].

Despite the widespread use of digital games among preschoolers around the world, scientific literature in recent years has noted a trend of the increasing popularity of board games. This trend is explained, among other things, by "Internet fatigue" and the desire to diversify family leisure time [15]. A decade ago, in the English-speaking scientific discourse, one could see the opposition between digital games and non-digital or analog games. Analog games meant any type of game that did not involve the use of a digital device (computer, game console, phone or tablet). Accordingly, in a digital game, the interaction between players was mediated by a digital device or the player interacted directly with the device. Analog games included tabletop/board games, card games, and sports games [20]. The traditional attribute of board games was considered to be the presence of a playing surface (table), chips/cards/tokens, and rules. However, nowadays, the boundaries between digital and analog games are blurring, and there is a trend to include digital attributes (e.g., augmented reality or rule explanations) in board games that require the use of digital devices during a game session [12].

The impact of board games on various aspects of preschoolers' development has been much less in the field of scientists' attention than the impact of digital games. Two areas of research in this area can be distinguished [12; 21]. The first direction is represented by works covering different aspects of preschoolers' mathematical skills development (counting, arithmetic actions) [17; 18; 19; 23]. The second group includes studies related to the development of social interaction between normotypic children and between normotypic children and children with disabilities [11; 16].

In general, to date, there are not enough comparative studies on children's interaction with board and digital games; this direction needs further development. This article presents a part of the results of a study of the features of preschool children's use of digital and board games conducted on a sample of Russian parents in 2023.

Peculiarities of Preschool Children's Use of Digital and Board Games: A Survey of Parents

The empirical study was conducted from March to September 2023. As a hypothesis, it was hypothesized that there are differences in the use of digital and board games by preschool children. In order to test this hypothesis, a special questionnaire "Modern children: digital games VS board games" (O.V. Salomatova, Yu. A. Tokarchuk, 2023) was developed as part of this study. The questionnaire, created using a google form, consisted of 29 closed questions. All questions were subjected to expert evaluation before the questionnaire was administered. Parents of preschool children (N=15) and specialists in the field of child psychology (N=5) acted as experts. Parents were asked to assess:

- Whether the wording of the questionnaire questions is understandable;
- Whether the questions of the questionnaire do not cause ambiguity;
- Whether the proposed answer options are sufficient;
- Whether they would like to add something to the already proposed questions.

The task of experts was to evaluate the consistency, sufficiency, correctness and compliance of the wording of questions and answers with the objectives of the questionnaire. Based on the results of the expert assessment, the questions and answers of the questionnaire were adjusted and supplemented. The questionnaire was then distributed on the Internet (the breadth of coverage was the territory of the Russian Federation).

Parents of children aged 3 to 7 years (N=556), among whom 52.3% were boys (N=291) and 47.7% were girls (N=265), participated in the questionnaire. According to the data obtained, 94.1% (N=523) of children attend full-day preschool, 1.3% (N=7) attend short-term stay group and 4.7% (N=26) do not attend kindergarten. The characteristics of the sample are presented in Table 1.

Table 1

Characteristics of the Study Sample (N=556)

Age of the Parents

Токарчук Ю.А., Саломатова О.В., Гаврилова Е.В.
Использование настольных и цифровых игр
дошкольниками: результаты опроса российских
родителей
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Том 16. № 1. С. 76–95.

Tokarchuk Yu.A., Salomatova O.V., Gavrilova E.V.
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Vol. 16, no. 1, pp. 76–95.

Younger than 21 years	21-30 years	31-40 years	41-50 years	Older than 50 years
0,7% (N=4)	15,5% (N=86)	65,3% (N=363)	16,5% (N=92)	2% (N=11)
Age of the Children (Full Years)				
3 years	4 years	5 years	6 years	7 years
22,5% (N=125)	19,4% (N=108)	22,5% (N=125)	22,5% (N=125)	22,5% (N=125)

The database of the study is presented in the repository of psychological research and tools RusPsyDATA [10].

Quantitative analysis of empirical data was performed using the methods of descriptive statistics, Spearman correlation coefficient, one-sample Chi-square criterion and nonparametric McNemar test for related samples. Calculations were performed in IBM SPSS Statistics V23 statistical package.

Results

Our focus was primarily on the frequency and amount of time children spent playing board games. Regarding frequency, parents indicated that 32.7% (N=182) of children play about 2-3 times a week, 27.2% (N=151) of children play once a week, 17.8% (N=99) of children play board games every day, 13.8% (N=77) play about 4-5 times a week, and 8.5% (N=47) do not play board games. Meanwhile, 38.5% (N=215) of children spend up to 30 minutes a day playing board games, 37.2% (N=207) play between 30 minutes and 1 hour a day, 10.8% (N=60) of children spend 1 to 1.5 hours a day playing board games, 4% (N=22) of children play for 1.5-2 hours a day, 1% (N=5) of children play board games for more than 2 hours a day and 8.5% (N=47) of children do not play board games.

Mostly children play board games at home, this was indicated by the majority of parents (73.9%, N=411), in kindergarten about 18.2% (N=101) of children play. Most often parents, as well as siblings are involved in the process of board games. Detailed distribution of answers to the multiple choice question: "With who does the child usually play board games?" is presented in Fig. 1.
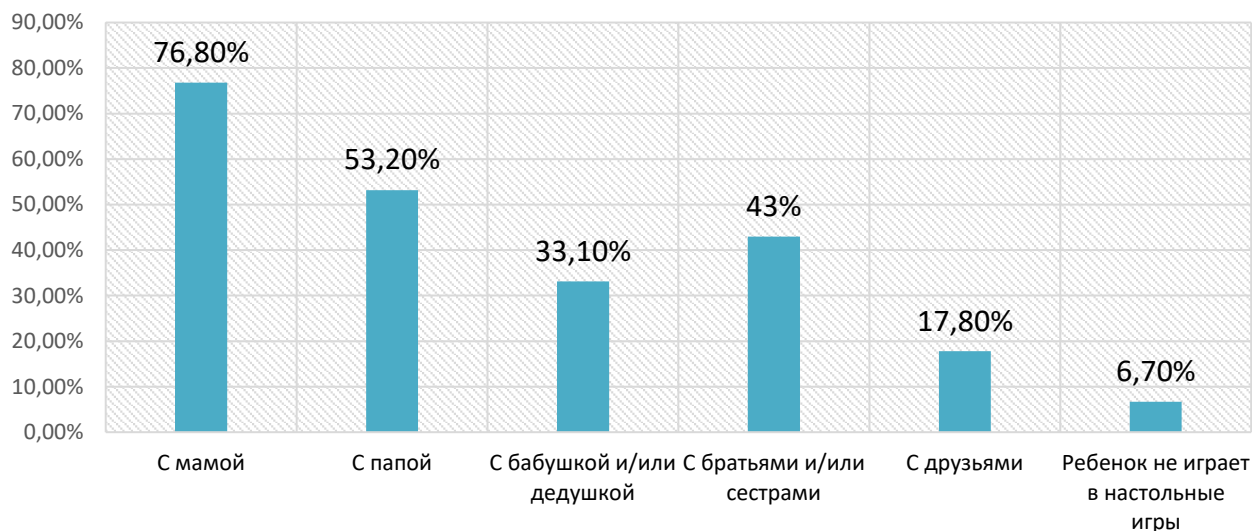
Fig. 1. Distribution of answers to the question "With who does the child usually play board games?" (N=556)

According to the survey results, 47.8% (N=266) of children play board games more often on weekends, 32.2% (N=179) of children play on weekdays and weekends equally, 11.2% (N=62) of children play more often on weekdays.

When choosing board games, 71% (N=395) of parents consider it important to match the board game to the child's age, 59.5% (N=331) of parents pay attention to the game plot, 37.4% (N=208) and 34.7% (N=193) of parents respectively choose a game based on visual design and quality of materials used. At the same time, game recommendations from teachers are important for 24.3% (N=135) of parents, recommendations from friends - for 13.1% (N=73) of parents, only 1.4% (N=8) of parents take into account the opinion of store clerks and 24.1% (N=134) of parents buy their child what he/she asks for.

Answers to the multiple-choice question "What types of board games does your child prefer? (Maximum 3 options)" were arranged according to the principle of developmental effect orientation. Thus, the most preferred among children were board games aimed at developing memory and attention (67.1%, N=373), and games aimed at developing logic (49.8%, N=277). Games teaching reading and counting skills are interesting for 37.9% (N=211) of children, 30.4% (N=169) of children prefer entertaining board games, creative games are interesting for 15.8% (N=88) of children. Some children play games aimed at developing reaction speed, their number amounted to 9.4% (N=52).

When asked about the variety of board games played by the child, slightly more than a third of parents indicated 4-6 types of board games (38.8%, N=216), a third of parents mentioned 1-3 types of board games (31.8%, N=177), a quarter of parents indicated 7 or more types of board games (23.6%, N=131).

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Of considerable interest is the question about the child's behavioral strategies in case of difficulties in the process of board games. Most children ask for help from their parents: less than half of children ask to read the instructions carefully (41.9%, N=233), a small part of children ask to look up the rules for them on the Internet (3.6%, N=20). Approximately one third of children solve problems on their own in case of difficulties: they invent their own rules - 33.8% (N=188) of children, watch videos with rules on their own - 2.2% (N=12) of children. 11.5% (N=64) of children are not ready to solve arising problems, they just stop playing.

The vast majority of parents do not limit the time their child spends playing board games in any way, 68.7% (N=382) of parents indicated that their child plays whenever they want to, and 40.8% (N=227) reported that children play in their free time. About half of the children play board games when someone in the family has time (56.5%, N=314) or with their friends (18.3%, N=102). Some parents resort to board games when they need something to occupy their child (10.1%, N=56), when they need their child to be quiet (3.4%, N=19), and when parents are tired and want to rest (2.9%, N=16).

It seems interesting that almost half of the children who play board games are not interested in buying new variants (59.8%, N=333). One third of children ask their parents to buy them no more than once every 1-2 months (31.9%, N=177).

Considering the issue of playing board games together with children, it is impossible not to notice that a significant majority of parents participate in the game directly (76.6%, N=426) or join the game when the child needs help (17.8%, N=99). A small proportion of parents participate in the game indirectly - they do not play, but watch their children play (2.3%, N=13), and only a small proportion prefer children to play independently (3.2%, N=18).

The next block of questions focused on game applications on digital devices. According to the data obtained, 70.1% (N=390) of the surveyed parents have preschool-aged children playing apps, while 29.9% (N=166) of parents responded negatively. The distribution of the data regarding the choice of digital devices for play is presented in Figure 2. The obtained data fully correlate with the results of surveys previously conducted on the basis of the Center for Interdisciplinary Studies on Contemporary Childhood MSUPE, according to which preschool children most often use a phone, tablet or computer (in descending order) [8].
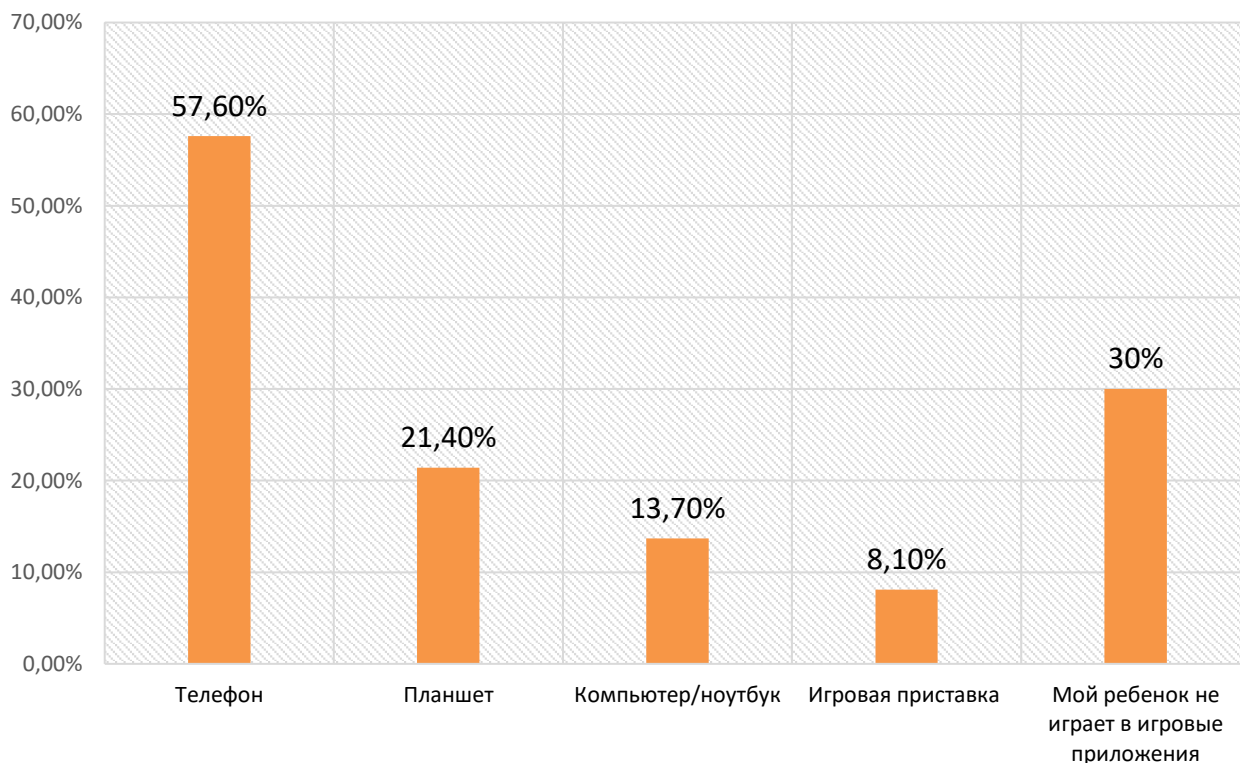
Figure 2. Digital devices on which children play game applications (N=556)

When asked about the average amount of time a child plays digital apps, parents' opinions were divided as follows:
- 22.1% (N=123) of children play every day;
- 19.4% (N=108) of children play 2-3 times a week;
- 15.8% (N=88) of children play once a week;
- 12.8% (N=71) of children play 4-5 times a week;
- 29.9% (N=166) of children do not play digital applications.

At the same time, on average, almost one third of preschool children spend about half an hour per day playing (27%, N=150), a quarter of children play between 30 minutes and 1 hour per day (24.8%, N=138), and some children play for 1-1.5 hours (9.5%, N=53). Children of 4.7% (N=26) of the parents surveyed spend about 1.5-2 hours playing digital applications, about 2-3 hours a day - 2.2% (N=12) of children and more than 3 hours a day played by 2% (N=11) of the respondents' children. In addition, a statistically significant relationship was found between the age of the child and the amount of time spent playing digital games, this applies to both the frequency of games per week (r=0.26; p=0.000) and the amount of play time per day (r=0.15; p=0.01). The results suggest that the older the child is, the more often he or she pays attention to game applications and spends more time per day playing them.

Most often parents note that children play digital applications more often on weekends, 40.1% (N=223) of respondents indicated this, almost twice as few parents do not make a

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distinction between weekends and weekdays (20.5%, N=114). Some parents think that their children play more on weekdays (9.5%, N=53). The results of statistical processing showed significant differences in the choice of response categories when studying children's play activity in board games (Pearson's Chi-square=228.32; p<0.001) and digital applications (Pearson's Chi-square=112.71; p<0.001). Thus, it was found that board games were most frequently played by children on weekends (47.8%). The second most frequent answer was "play equally on weekdays and weekends" (32.2%). As for digital applications, children also most often play them on weekends (40.1%). At the same time, the second most frequent response was that children "do not play digital applications" (29.9%).

To compare the most frequent response categories for board games and digital apps, the non-parametric McNemar test for related samples was applied to test whether combinations of values of two categorical fields are equally likely. In other words, it was tested whether frequencies differed in the selection of the most popular response category when assessing children's play activity in the two conditions - playing board games and digital games. For this purpose, each type of response was coded on a "1"/"0" basis, where all responses "children play (board games/digital games) on weekends" were taken through the numerical indicator "1" and all other responses were taken through the indicator "0". The results of the analysis showed significant differences in the frequency of choosing this answer (McNemar's Chi-square=7.06; p<0.008) - that is, the choice of the answer category "children play on weekends" occurs more often in the case of evaluating board games compared to digital games. Significant differences were also established when comparing the frequencies in the choice of the answer "play both weekdays and weekends" - more often for board games (McNemar's Chi-square=20.25; p<0.001) and the answer "do not play" - more often it is chosen for digital applications (McNemar's Chi-square=75.17; p<0.001). No significant differences were found between the frequency of choosing the answer "play on weekdays" when evaluating board games and digital games (McNemar's Chi-square=0.65; p<0.42). Thus, when evaluating board games versus digital games, parents are more likely to select two categories of responses, "play on weekends" and "play both weekdays and weekends." Both answers are chosen to a greater extent in the case of board games.

As in the case of board games, parents consider age appropriateness (57.4%, N=319), game plot (39%, N=217) and visual design (19.1%, N=106) to be the most important parameters when selecting game applications. However, nearly one-third of respondents reported that their child does not play digital games at all (28.96%). The results of comparing the selection frequencies of the three most popular answers showed significant differences in favor of board games. That is, when evaluating board games versus digital games, parents are more likely to focus on factors such as age appropriateness (McNemar Chi-Square=22.39; p<0.001), story (McNemar Chi-Square=56.25; p<0.001), and visual design (McNemar Chi-Square=55.64; p<0.001). Only 12.1% (N=67) of surveyed parents rely on teachers' opinion when choosing digital games, which is 2 times less than in the issue of choosing board games (24.3%). In addition, when choosing game applications for children, parents rely on such

indicators as application rating (8.3%, N=46) and number of downloads/installations (4.7%, N=26). Relying on the child's choice to install the apps they ask for is 18.5% (N=103) of surveyed parents.

Unlike board games, among digital games, creative applications (various coloring books, applications for drawing, creating a new appearance, etc.) are the most popular; 41.4% (N=230) of children have them installed. Next, applications for memory and attention development (31.7%, N=176), entertainment applications (32%, N=178), applications for reaction speed development (23.6%, N=131) and applications teaching reading and counting skills (17.6%, N=98) were distributed by frequency.

When asked about the number of game apps installed on children's digital devices, the majority of parents reported 1 to 3 apps (37.2%, N=207), slightly fewer parents reported 4 to 6 apps (19.2%, N=107), and about a quarter of parents reported that their child uses 7 or more game apps (23.6%, N=131).

The main trend in the child's behavioral strategies when encountering difficulties with digital apps is the same as the trend found with board games: half of the children seek help from parents (49.6%, N=276). 8.6% (N=48) of children deal with the rules on their own. 6.5% (N=36) of children are not ready to cope with difficulties and stop playing immediately, and 5.4% (N=30) of children ask their parents to download another game (Fig. 3).
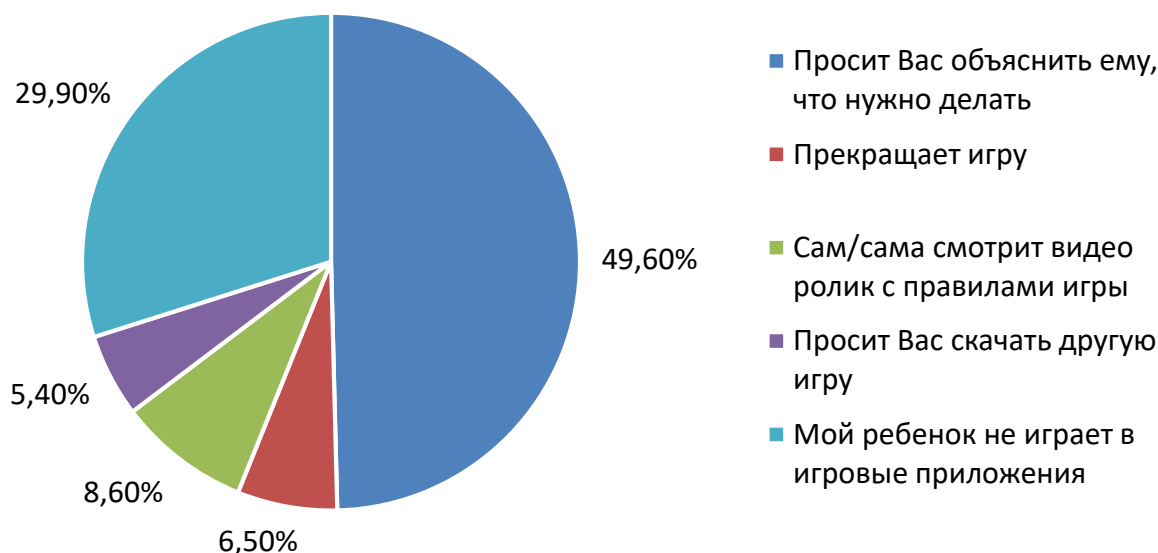

Figure 3. Distribution of answers to the question "When a child has difficulties in the game application, he/she..." (N=556)

Unlike board games, play in digital games tends to be restricted by parents. Children are more likely to play board games when they want to - this was the most frequently chosen answer by parents (68.7%). As for digital games, only 16.2% of all respondents admitted that children can play them

whenever they want. The frequency of choosing this answer is clearly different when comparing the two types of play activity (McNemar's Chi-square=255.06; p<0.001). Thus, more than two-thirds of all parents surveyed do not seek to limit their child's time playing board games, it can be assumed that board games are a more preferred pastime for children from the parents' perspective. In addition, 29% of respondents admitted that they only allow their child to play digital games when they have free time, while in the case of board games, 40.8% of parents also chose this response category. Statistical analysis also showed significant differences in the frequency of choosing this answer in the case of board games and digital apps (McNemar's Chi-square=20.59; p<0.001).

The least popular response categories regarding board games were as follows: "plays when they need to occupy the child" (10.1%), "to keep the child quiet" (3.4%), "when children are tired and want to rest" (2.9%), and "as a method of encouragement" (0.4%). As for digital apps, these response options are chosen more often by parents. Thus, 21.4% of all respondents allow their child to play digital applications to keep them quiet, 16% of parents let them play when they want to occupy their child with something. In turn, another 11.7% prefer to give digital apps to relax, and 11.9% use them as encouragement.

It is also characteristic that children are significantly less likely to play game apps with their friends (6.7%, N=37) than they are to play board games (18.3%, N=102). Thus, the survey results show that board games are more conducive to the development of cooperation in the process of playing together, while digital games are more often an individual activity.

The distribution of answers to the question about how often a child asks parents to install a new game application or buy a new board game is also noteworthy (Table 2).

Table 2

Frequency of Choice of Answers to the Question About How Often Children Ask to Buy a New Board Game or Install a Digital Application (N=556)

Board Games		Digital Applications	
1 every 2 months or less frequently	14%	1 every 2 months or less frequently	10,3%
1 a month	16%	1 a month	11,7%
1 every 2 weeks	2,5%	1 every 2 weeks	4%
1 a week	2,2%	1 a week	5,3%
4-5 times a week	0,3%	4-5 times a week	2%
2-3 times a week	0,2%	2-3 times a week	5,6%
Every day	1,3%	Every day	1,6%
My child plays, but does not ask to buy a new board game himself/herself	56,5%	My child plays, but does not ask to install a new app himself/herself	28,8%
My child does not play board games	7%	My child does not play game apps	29,9%

The data in the table show the frequencies in the choice of each category response when evaluating the question about asking children to buy a new board game and/or install a digital app. The results of the statistical treatment showed significant differences in response category choices for board games (Pearson's Chi-square=1411.52; p<0.001) and digital apps (Pearson's Chi-square=422.88; p<0.001). It is important to note that in both cases, the most common response is that the child does not ask to buy the game/install the app. Moreover, parents are more likely to choose this response in the case of board games than digital apps (McNemar's Chi-square=31.11; p<0.001). At the same time, the least frequent answer in relation to board games characterizes the child's request to buy him/her a game 2-3 times a week (0.2% of respondents answered). When comparing the frequency of choosing this answer in the case of board games and digital applications, we obtained significant differences in favor of the latter (McNemar Chi-square=28.03; p<0.001). That is, according to parents, the child much more often asks to install a digital application (2-3 times a week) than to buy a board game. With regard to the other indicators, no significant differences could be found. Thus, the overall results show that the majority of respondents state that children do not ask them to buy a new board game or install a new digital application.

Parents surveyed indicated that among the apps their children use are analogs of board games (21%, N=117) or similar to them (21%, N=117). Another third of parents reported that the installed game applications are fundamentally different from board games (28.2%, N=157) (Fig. 4).
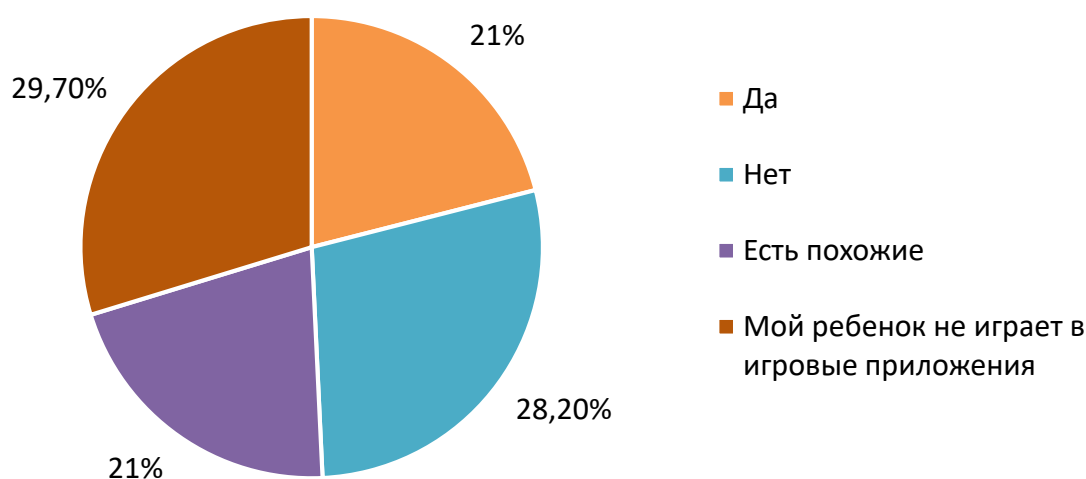

Fig. 4. Distribution of answers to the question "Are there analogs of board games among the installed game applications?" (N=556)

It is noteworthy that unlike board games, in which parents are most often directly involved, digital applications are most often played by children independently or under parental supervision.

Токарчук Ю.А., Саломатова О.В., Гаврилова Е.В.
Использование настольных и цифровых игр
дошкольниками: результаты опроса российских
родителей
Психолого-педагогические исследования. 2024.
Том 16. № 1. С. 76–95.

Tokarchuk Yu.A., Salomatova O.V., Gavrilova E.V.
The Use of Board Games and Digital Games by
Preschoolers: Results of a Survey of Russian Parents
Psychological-Educational Studies. 2024.
Vol. 16, no. 1, pp. 76–95.

The results of statistical processing showed significant differences in the choice of response categories with regard to board games (Pearson's Chi-square=823.64; p<0.001) and digital applications (Pearson's Chi-square=162.49; p<0.001). Thus, in the case of board games, the majority of respondents admit that they play together with their children (76.6%), while digital applications are played together with the child only by 10.6% (on the same device) and 2.0% (on different devices) of respondents. Thus, according to parents, children show more autonomy in case of using digital apps.

Discussion

The results obtained seem to be very interesting, primarily because there are not many studies currently in the scientific literature that have been targeted to compare board games and digital games.

We managed to find several works comparing the influence of digital and board games on the development of self-regulation and executive functions in preschool children.

Thus, the work of D.A. Bukhalenkova et al. presents a theoretical review on the topic of preschoolers' self-regulation development in games of different types [1]. Based on the analysis of studies, it is concluded that digital games can provide rapid development of a skill, but the effect will not be lasting in time. The author attributes the lack of a lasting effect to the fact that a child during a digital game is often alone with the gadget and does not interact with peers or adults. Board games can be used to practice skills, but unlike most digital games, they are played in small or large groups. Games with rules vary in complexity and the instructions or rules that players must follow. That is, they place different demands on a child's working memory. Games with rules, compared to digital games, can utilize a wide variety of self-regulation components in a variety of combinations and forms. In addition, games with rules have high motivational characteristics: they usually have winners and losers, and the game process itself is fun and excitement [1].

Two studies by A.N. Veraksa et al. [24; 25] examine the influence of different types of games on executive functions - processes that provide arbitrary control over thoughts and actions. Executive functions include working memory, switching between tasks, and inhibition. The results of the first study [24] showed that playing digital games affected all executive functions: switchability, auditory working memory, visual working memory, and others. The performance of these characteristics as well as behavioral and cognitive inhibition improved significantly. Board games affected switchability, auditory working memory, and visual-spatial memory [24]. The second study [25] monitored the stability of the results described in the first article: 4 months after the completion of the first experiment, a retest was conducted. The results of the analysis showed a decrease in the digital game group's scores on cognitive flexibility, verbal and visual working memory, etc. In other words, digital play does not lead to a lasting improvement in cognitive flexibility and working memory and does not seem to promote systemic changes in children's development. Rather, it trains individual mental processes without qualitative restructuring of mental structures [25].

The present study allows us to supplement the already available empirical data collected on a Russian sample regarding the use of digital and board games by preschoolers, as well as parental strategies of interaction with children in the context of board and digital games.

Conclusions

The analysis of the survey results shows that for Russian parents the most important criteria for selecting both board games and digital applications are age appropriateness, game plot and visual design. However, when choosing board games, parents are guided by these parameters much more often than when choosing digital games. At the same time, a significantly smaller number of parents follow the recommendations of teachers when choosing game applications than when choosing board games. In addition, parents more often take into account the majority opinion, focusing on such parameters of applications as rating and number of downloads/installations.

According to the findings, parents are more likely to limit the time children spend on digital games, considering board games to be a more preferred pastime for children. At the same time, parents are much more likely to use digital apps as a means of monitoring their child's behavior as well as a method of encouragement.

The presence of a fairly large number of apps similar to board games indicates that children prefer the interactive format of traditional board games. When faced with difficulties in board or digital games, children in most cases seek help from their parents. Interestingly, when encountering problems in the process of board games, children are significantly more likely to make attempts to figure things out on their own, coming up with their own rules or looking up instructions on the Internet.

Overall, the findings suggest that the majority of Russian parents practice different strategies when organizing board games and digital games. Parents are significantly less likely to be directly involved in digital games, allowing children to play independently or under their supervision. In contrast, in board games parents are actively involved in the process of playing together. The data obtained allow us to confirm the hypothesis put forward in the study about the existence of differences in the use of digital and board games.

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Psychological-Educational Studies. 2024.
Vol. 16, no. 1, pp. 76–95.

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Токарчук Ю.А., Саломатова О.В., Гаврилова Е.В.
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Психолого-педагогические исследования. 2024.
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