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Research article

What do parents think about the implication of mobile devices in the learning agency of their children: The role of attitudes and parental mediation

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Abstract

Introduction. Studies of the effects of using mobile devices (MDs) by children and adolescents in the learning process have contradictory results. Attitudes and personal positions of adults play an essential role in the formation of constructive strategies of children's and adolescents' use of MDs in education. This study aims to identify what schoolchildren's parents think about the forms of MD use by their children and how their views are affected by parental attitudes towards mobile technologies and patterns of parental mediation of MD use.

Materials and Methods. The study involved 538 parents of schoolchildren. The age range of the participants was 25–69 years (mean age — 40.72 years; 92.38% women). The participants were asked to assess the frequency of various forms of MD use by their children. They also filled out questionnaires aimed at identifying parental attitudes towards mobile technologies and strategies for parental mediation of their children's digital practices.

Results. The results showed that parents have rather ambivalent views about the role of MDs in the learning activities of schoolchildren. There is a pronounced differentiation of parental views depending on the sex and age of the child. The structure of parents' views about the forms of MD use by schoolchildren is determined by the dimensions of facilitating the child's learning, distracting the child from learning, and substituting the child's learning. Parents who consider MDs to play a destructive role in the child's learning also show contradictory strategies of parental mediation and negative attitudes towards mobile technologies. In contrast, parents who have positive attitudes towards mobile technologies tend to perceive MDs as strengthening the child's educational opportunities and show more comfortable parental mediation.

Conclusions. The results make it possible to identify possible vectors of psychological and educational work with parents to enhance their competence in the field of digital socialization of children and harmonize child-parent relations in the context of digital consumption practices.

Keywords: mobile devices, schoolchildren, parents, views, attitudes, parental mediation

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Научная статья

Что думают родители о значении мобильных устройств в обучении их детей: роль установок и родительской медиации

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Аннотация
Введение. Исследование эффектов использования мобильных устройств детьми и подростками в учебном процессе приводит ученых к противоречивым результатам. Существенную роль в формировании конструктивных стратегий использования мобильных устройств в обучении детей и подростков играют смысловые установки и личностные позиции взрослых. Целью настоящего исследования стало выявление представлений родителей школьников о формах использования мобильных устройств их детьми в связи с паттернами родительской медиации использования мобильных устройств детьми и установками в отношении мобильных технологий.
Материалы и методы. В исследовании приняли участие 538 родителей школьников в возрасте от 25 до 69 лет (средний возраст — 40,72 года; 92,38 % — женщины). В ходе исследования участники оценивали частоту проявления различных форм использования мобильных устройств их детьми, а также заполняли опросники, направленные на выявление установок в отношении мобильных технологий и стратегий родительской медиации детских цифровых практик.
Результаты исследования. Результаты исследования показали, что представления родителей о роли мобильных устройств в учебной деятельности школьников являются скорее амбивалентными. При этом отмечается выраженная дифференциация родительских представлений в зависимости от пола и возраста ребенка. Структура представлений родителей о формах использования мобильных устройств школьниками определяется размерностями дополнения, замещения и отвлечения от учебной деятельности школьника. Выраженность представлений о деструктивной роли мобильных устройств в учебной деятельности ребенка проявляется наряду с противоречивыми стратегиями родительской медиации и негативными установками в отношении мобильных технологий. Позитивные установки, напротив, способствуют восприятию цифровых практик ребенка в контексте усиления его образовательных возможностей и более комфортной родительской медиации.
Заключение. Результаты проведенного исследования позволяют обозначить возможные направления психологической и просветительской работы с родителями по формированию у них родительской компетентности в сфере цифровой социализации их детей, гармонизации детско-родительских отношений в контексте практик цифрового потребления.

Ключевые слова: мобильные устройства, школьники, родители, представления, установки, родительская медиация

Introduction

In 2022, 96 % of Russian adolescents aged 12–17 used the internet every day and were online on average about six hours per day, according to a study by Mediascope CROSS WEB. The content consumed through mobile devices (MDs) made up 94 % of all digital consumption in the said age group (Borozdina 2022). These data show the importance of the internet and MDs in Russian children's and adolescents' everyday life. As increasingly more schoolchildren use MDs in Russia, the potential of MD use in education is also on the rise.

The interest in using MDs in education grows alongside the increase in the processing power and channel capacity of each new generation of MDs. In addition, MDs are conveniently integrated into everyday life, which has made their educational use more affordable and universal (Perić 2017). Mobile learning provides a valuable opportunity to harmoniously blend formal and informal education. MDs allow their users to easily switch between various learning environments and push the boundaries of what is possible (Çakmak 2019; Perić 2017).

The modern schoolchild's living environment is becoming increasingly digitalized, which has a major impact on the schoolchild's cognitive, affective and conative dimensions of leaning (Bezgodova et al. 2020). The use of MDs in education is a subject of ongoing debates, and some countries even prohibited the use of mobile phones in schools. The arguments against mobile education vary: mobile technologies are said to be a distraction from learning (Ledsom 2019); they are argued to be affected by 'digital inequalities' (Jin, Sabio 2018); and they also raise health concerns (Chau et al. 2022). In contrast, the proponents of mobile education provide evidence that gamification of education through mobile games and in-class contests allows effective acquisition of both knowledge and skills (Galyuk, Odiyak 2022; Georgieva-Tsaneva, Serbezova 2021; Wang, Tahir 2020), and that MDs ensure access to learning resources (Polivanova, Koroleva 2016) and make it possible to organize individualized learning (Broydo, Ilyina 2013). There are also scholars whose views are somewhere in the middle: they maintain that MDs *per se* are neither good nor bad, and that MDs are helpful only where they are used under the supervision of adults, where they are not overused, and where their application takes into account the specifics of the subject (Callow, Orlando 2015; Deng et al. 2022). In general, the available research highlights the major role of adults' attitudes and personal positions in establishing constructive strategies of MD use in education of children and adolescents. The present study aims to identify how parental attitudes to mobile technologies and the patterns of parental mediation of MD use affect what schoolchildren's parents think about the forms of MD use by their children.

Parents in situation of childhood digitalization

The intensive sociocultural and technological changes of the recent decades encourage scholars to rethink the phenomenon of childhood and define childhood transformations in terms of technologization (Plowman et al. 2010; Shalaeva 2015 and others) and digitalization (Lahikainen et al. 2017). Such definitions are essentially associated with the growing role of digital media in socialization, the increasing virtualization of the child's interpersonal interactions with both adults and peers, and the intensive use of digital technologies in children's education.

Scholars increasingly often observe that parents are becoming less pedagogically competent as a result of a number of factors: the traditional ways of passing social experience from parents to children become less effective; parents are insufficiently aware of children's information environment; and the culture of information consumption is insufficiently developed (Andreeva 2018; Ponukalina 2020; Soldatova, Rasskazova 2019). However, parents still remain their children's main guides in the world of cultural meanings. It is argued that parents' attributions are the key factor in the organization of the physical and social environment of the child's development (Lansford, Bornstein 2011). Parents' attributions underlie the parenting style, and the parenting style implements parents' intentions to pass their own values and views to their children (Eidemiller, Yustickis 2008, and others). In each particular family, a specific combination of parental cognitive attitudes becomes a significant factor of the child's social situation of development — especially taking into account that today's parents belong to the first generation of digital natives (Prensky 2001). Such parents find it quite acceptable that new technologies become part of childrearing and children's leisure; such parents are also sensitive to innovations in childrearing and feel the need to search for new ways of interacting with their children (Andreeva 2018). Rapid technological progress is another thing that makes today's family situation unique: modern parents do not have their own childhood experience of using the kind of technology that is now available to their children, which means that they

cannot rely on earlier parenting models in this particular aspect (Plowman et al. 2010). New parenting standards take shape under the influence of information and communication environment that carries diversified and contradictory meanings — including expert recommendations by video bloggers, advertisements of children's goods and services, etc. (Andreeva 2018). Modern parents are observed to be confused and inconsistent when it comes to parenting practices related to MD use, and parent-child relationships are described as conflicting due to the digital gap between parents and children (Ponukalina 2020).

Parental mediation of children's online activity has been the subject of significant number of research works (see, for example: Soldatova et al. 2022; Warren, Bluma 2002). Parental mediation is seen as a combination of methods, techniques and practices used by parents to control the use of digital devices by their children, maintain constructive practices of using such devices, and create an ecology of the child's media environment (Livingstone et al. 2011). Experts recognize that it is impossible to prevent today's children from using the digital environment, which poses new challenges for parents in exercising their parental functions (Nikken, de Haan 2015). It should be noted that parental mediation is a multi-dimensional concept. It encompasses all types of parental strategies that help to reduce the negative impact of media content on children, including controlling, prohibitions, discussions and explanations, and co-use (Fu et al. 2020). Restrictive mediation, instructive mediation and co-viewing were the three key dimensions of parental mediation identified already when studying parental strategies of mediating children's television viewing and game playing (Warren et al. 2002), where a 'dimension' means a particular behavior model characterized by a set of qualitative and quantitative features that are closely connected. However, as internet use became more prevalent among children and adolescents, researchers suggested that the traditional three dimensions needed to be expanded (Livingstone, Helsper 2008). Livingstone et al. single out five components of parental mediation, including two forms of active mediation related to internet co-use and parent-child communication about internet safety; the model proposed by Livingstone et al. also includes interaction restrictions (strict rules and restrictions), monitoring (continuously checking up on the child's activity in the internet) and technical restrictions (various parental control software) (Livingstone, Helsper 2008). P. Nikken and J. Jansz put forward a five-dimensional model that includes two restrictive strategies (control of the amount of time spent

on media and control of the content) and the monitoring strategy, where monitoring means parental tracking of the child's online activities while also utilizing active mediation and co-use of technology (Nikken, Jansz 2014). G.U. Soldatova and E. I. Rasskazova use three dimensions of parental mediation in compliance with the EU Kids Online methodology, including explanations and co-use, restrictions and prohibitions, and monitoring and checking up (Soldatova, Rasskazova 2019). Russian researchers also propose independent parental mediation classifications based on the types of parent-child relationships related to the digitalization of the child's social situation of development. For example, I.A. Isakova identifies the following types of parent-child relationships: authoritarian (corresponds to the restrictive strategy), careless (characterized by permissiveness in relation to the child's digital practices), loyal (vaguely corresponds to active mediation) and symbiotic/authoritative (where digital devices make parent and child closer and involve their joint activities) (Isakova 2020). According to I.A. Isakova's data, most parents employ the permissive/non-interference practices and prohibitive/restrictive practices in relation to MD use by their children, which are hardly constructive strategies of parental mediation.

Research shows that parental mediation plays an important role in how children use the internet. For instance, there is evidence that parental mediation in the form of monitoring is a predictor for the child's use of social networks and chats (Vaala, Bleakley 2015). There are studies that demonstrate that parental mediation, especially its restrictive type, is not effective in preventing problems of MD use by children and adolescents. Specifically, there is evidence that parental monitoring reduced neither online risks in adolescents (Livingstone, Helsper 2008) nor the time spent online (Kostina, Novikova 2022). In contrast, parental monitoring was even found to contribute to problematic internet use (Fu et al. 2020) and online gaming addiction (Xu et al. 2012) in adolescents with particular personality traits.

Parents' personality traits and attitudes play an important role in parental mediation. Researchers found that parental mediation of MD use by their children is affected by three factors: parents' personality traits, parent' perception of the risks of children's MD use, and parents' own MD use patterns. Specifically, active mediation was found to be more often used by parents who themselves have less addiction to smartphones and have such personality traits as openness and agreeableness (Hwang, Jeong 2015). There is also evidence of the key role of parental stress in parental mediation behavior — stress encourages parents to be more

involved in MD use by their children and use all possible mediation strategies from prohibitions to co-use (Warren, Aloia 2019). A meta-analysis by Wang et al. identified the main predictors for parental mediation in the sphere of children's media consumption: it was found that parental mediation depends on the child's age and sex, parents' level of education and parents' competence in the sphere they seek to control; parents' negative attitude to media was found to be a predictor of restrictive mediation, while parents' involvement in the child's life was a predictor of active mediation (Wang et al. 2023).

At the same time, there is not enough research on parental mediation of MD use in the context of children's and adolescents' learning and cognitive activity. We can make an assumption that parental attitudes and the type of parental mediation are predictors of parents' views on MD use by their children.

Materials and methods

The study was carried out in March–April 2023. Parents were invited to take part in the study through letters sent to Herzen University's graduates and partner organizations. Online questionnaires were filled in by 564 respondents from various regions of Russia. Among those, there were 26 people who either did not have children or had children of the preschool age — such respondents were excluded from the sample. The final sample size was 538 respondents aged 25–69 years: mean age 40.72, standard deviation (S) = 8.34, 92.38 female. Table 1 contains the details of the sample.

All the parents were informed about the purpose and terms of participation in the study and gave an informed consent.

To identify the parents' views about MD use by their children, we asked the parents to assess how frequently their children use MDs for various

Table 1. Socio-demographic data for the parents sample

Parameter		Number	Percent
Parent's sex	Male	41	7.62 %
	Female	497	92.38 %
Number of children in the family	One child	436	81.04 %
	Two or more children	102	18.96 %
Children's sex	Male	237	44.05 %
	Female	220	40.89 %
	Siblings of different sex	74	13.76 %
Children's age (X, S)	Younger children	$X = 11.37$	$S = 3.09$
	Older children	$X = 12.21$	$S = 3.08$
Residence by type of locality	Federal cities (Moscow, St Petersburg)	219	40.71 %
	Cities (> 1 million population)	124	23.05 %
	Cities (< 1 million population)	151	28.07 %
	Rural area	44	8.17 %
Residence by federal district	North-Western Federal District	247	45.91 %
	Volga Federal District	117	21.75 %
	Central Federal District	91	16.91 %
	Siberian Federal District	30	5.58 %
	Far Eastern Federal District	26	4.83 %
	North Caucasus Federal District	13	2.42 %
	Southern Federal District	9	1.67 %
	Ural Federal District	5	0.93 %

Табл. 1. Социально-демографические характеристики выборки родителей

Характеристика		Численность	Удельный вес в выборке
Пол	Мужской	41	7,62 %
	Женский	497	92,38 %
Количество детей в семье	Один ребенок	436	81,04 %
	Двое и более детей	102	18,96 %
Пол детей	Мужской	237	44,05 %
	Женский	220	40,89 %
	Сиблинги разного пола	74	13,76 %
Возраст детей (X, S)	Младшие дети	X = 11,37	S = 3,09
	Старшие дети	X = 12,21	S = 3,08
Место проживания	Города — субъекты РФ (Москва, Санкт-Петербург)	219	40,71 %
	Города с населением более миллиона	124	23,05 %
	Города с населением менее миллиона	151	28,07 %
	Сельские поселения	44	8,17 %
География проживания	Северо-Западный федеральный округ	247	45,91 %
	Приволжский федеральный округ	117	21,75 %
	Центральный федеральный округ	91	16,91 %
	Сибирский федеральный округ	30	5,58 %
	Дальневосточный федеральный округ	26	4,83 %
	Северо-Кавказский федеральный округ	13	2,42 %
	Южный федеральный округ	9	1,67 %
	Уральский федеральный округ	5	0,93 %

purposes. The list of purposes was prepared based on focus group interviews held with schoolchildren, where we established the main patterns of MD use by children and adolescents both in and outside school. The parents assessed the frequency of using MDs for such purposes on a five-point Likert scale (from 1 'almost never' to 5 'all the time'). There was also the 'undecided' option, and the total number of the 'undecided' answers was included in the subsequent analysis as the index of parents' lack of confidence in their views about MD use by their children.

To measure the parents' attitudes towards using mobile technologies in education, we used a questionnaire with two blocks of statements. The first block included statements corresponding to positive attitudes to using mobile technologies in education (e.g., 'The use of mobile technologies in teaching children and adolescents is necessary, because it means keeping pace with the times', 'When the teacher uses mobile technologies, stu-

dents are more involved in the learning process'). The second block included statements corresponding to negative attitudes towards using mobile technologies in education (e.g., 'The use of mobile devices at school is more likely to distract children and adolescents from learning than make them interested in learning', 'Mobile technologies have serious disadvantages as compared to traditional teaching and learning methods'). The respondents were asked to evaluate the degree of their consent with the statements using a five-point Likert scale (from 1 'strongly disagree' to 5 'strongly agree').

We also relied on our analysis of the various approaches to classifying parental mediation strategies described above, and took into account the following features of parental mediation: 1) restrictions and prohibitions, 2) active mediation, 3) co-use, 4) monitoring, 5) permissiveness, 6) the degree of comfort. The strategies 'restrictions and prohibitions', 'explanations and co-use' and 'the degree of comfort' were measured based on the parents'

answers about the frequency of their use of such strategies (from 1 'almost never' to 5 'all the time'). The strategies of 'permissiveness' and 'monitoring' were measured based on the parents' answers regarding their consent with proposed statements (from 1 'strongly disagree' to 5 'strongly agree').

The parents were also asked about the child's age, the age when the child started to use his or her first MD, and the technological advancement of the MD which the child currently uses.

Cronbach's alfa and McDonald's omega were used to measure the reliability of the proposed groups of statements. The proposed groups of statements showed significant internal consistency, which made it possible to subsequently use them as independent scales (Table 2). A respondent's scores on a scale were calculated as the ratio between his or her actual scores and the maximum amount of scores on the scale.

The obtained data were processed through qualitative and quantitative analysis — including descriptive statistics, correlation analysis (using Spearman's rank correlation coefficient), comparative analysis (using the median test), exploratory factor analysis, and regression analysis. The Jamovi ver. 2.3.28 and IBM SPSS Statistics ver. 23 software programs were used for statistical calculations.

Table 2. The reliability of measuring parental attitudes to the use of mobile technologies, parental mediation strategies and parental perception of the forms of MD use by their children

Scales	Number of items	Reliability		Descriptive data	
		α	ω	M	S
Positive attitudes	5	0.81	0.81	64.93	15.42
Negative attitudes	5	0.80	0.80	59.50	17.80
Restrictions and prohibitions	6	0.85	0.85	61.42	18.03
Explanation and co-use	5	0.81	0.82	73,00	16,8
Monitoring	2	0.89	0.89	61.06	28.76
Permissive	3	0.87	0.88	43.22	18.69
Comfort of parent mediation	3	0.87	0.88	72.78	19.31

Note: α — Cronbach's alpha; ω — McDonald's omega; M — mean; S — standard deviation.

Табл. 2. Оценки надежности измерения установок родителей в отношении использования мобильных технологий, стратегий родительской медиации и восприятия форм использования МУ их детьми

Шкалы	Количество пунктов	Надежность измерения		Описательные статистики	
		α	ω	M	S
Позитивные установки	5	0,81	0,81	64,93	15,42
Негативные установки	5	0,80	0,80	59,50	17,80
Ограничения и запреты	6	0,85	0,85	61,42	18,03
Объяснения и совместная деятельность	5	0,81	0,82	73,00	16,8
Мониторинг	2	0,89	0,89	61,06	28,76
Потворствование	3	0,87	0,88	43,22	18,69
Комфортность родительской медиации	3	0,87	0,88	72,78	19,31

Примечание: α — метод Альфа Кронбаха; ω — метод Омега Макдональда; M — средние значения; S — стандартные отклонения.

Results

At the first stage of the study, we analyzed the intensity of MD use by children as perceived by their parents (Table 3).

Parents tend to focus more on the information-related forms of MD use, i.e., finding and retaining information.

Parents believe that children use MDs for both learning and leisure. Watching entertaining videos or listening to music is perceived as the most popular form of MD use by children, unlike playing computer games which is seen as a rare form of MD use. It is seldom that parents see their children use MDs for academic cheating. However, the use of MDs for writing down ideas or strengthening

Table 3. Mean estimates of parental perceptions of the intensity of various forms of MD use by their children

Your children use mobile devices to:	M (S)				r	
	Female	Male	Siblings of different sex	Total sample	Mean age of children	Parent's age
Watch entertaining videos or listen to music	3.84 (0.93)	3.67 (1.07)	3.89 (0.93)	3.77 (1.00)	0.08	0.02
View the time	3.75 (1.22)	3.64 (1.26)	3.77 (1.17)	3.70 (1.23)	0.20***	0.01
Find information related to the learning material	3.73 (1.05)	3.46 (1.11)	3.68 (1.04)	3.60 (1.08)	0.32***	0.06
Take a photo of something important for doing homework or for learning in general	3.53 (1.12)	3.23 (1.24)	3.48 (1.20)	3.39 (1.19)	0.27***	0.04
Complete learning tasks (using a calculator, stopwatch, translator, etc.)	3.41 (1.09)	3.08 (1.30)	3.40 (1.05)	3.26 (1.19)	0.29***	0.09*
Surf websites, wasting time	3.20 (1.36)	3.12 (1.32)	3.32 (1.36)	3.18 (1.34)	0.15***	0.09*
Overcome boredom or annoyance	3.17 (1.26)	3.10 (1.33)	3.27 (1.18)	3.15 (1.28)	0.07	−0.02
Use educational and cognitive training mobile apps (language learning, math learning, etc.).	3.09 (1.10)	2.87 (1.10)	3.08 (1.02)	2.99 (1.09)	0.10*	0.05
Keep in touch with someone through messaging	3.05 (1.36)	2.75 (1.32)	3.00 (1.49)	2.91 (1.37)	0.26***	0.13**
Not miss important messages in the news feed of social networks	2.98 (1.39)	2.68 (1.42)	2.91 (1.46)	2.84 (1.42)	0.36***	0.16***
Recall certain facts needed to complete learning tasks	2.87 (1.14)	2.71 (1.13)	2.89 (1.08)	2.80 (1.13)	0.28***	0.10*
Search for ways to solve school tasks	2.89 (1.17)	2.64 (1.26)	2.85 (1.37)	2.77 (1.24)	0.35***	0.13**
Report to you or somebody else about what is happening in class	2.93 (1.29)	2.52 (1.32)	2.80 (1.32)	2.73 (1.32)	0.10*	−0.05
Discuss something unrelated to the learning process with other people	2.86 (1.36)	2.52 (1.30)	2.81 (1.38)	2.70 (1.34)	0.28***	0.08
Create a multimedia (visual image, video reportage, etc.)	2.76 (1.20)	2.39 (1.13)	2.70 (1.29)	2.59 (1.19)	0.18***	0.06
Play computer games instead of studying	2.33 (1.37)	2.74 (1.42)	2.55 (1.23)	2.55 (1.38)	0.05	0.12**
Navigate the terrain	2.53 (1.22)	2.53 (1.21)	2.45 (1.33)	2.52 (1.23)	0.27***	−0.02

Table 3. Completion

Write down ideas or important information related to the learning material	2.45 (1.26)	2.19 (1.20)	2.39 (1.18)	2.33 (1.23)	0.26***	0.00
Copy from other students' homework or from the internet	2.42 (1.28)	2.23 (1.26)	2.41 (1.33)	2.34 (1.28)	0.27***	0.14**
Strengthen their arguments while discussing learning tasks with you or other people	2.09 (1.06)	1.98 (1.03)	2.10 (1.07)	2.04 (1.05)	0.31***	0.14**

Note: M — mean; S — standard deviation; r — Spearman's rank correlation coefficient; * — $p < 0.05$; ** — $p < 0.01$; *** — $p < 0.001$.

Табл. 3. Усредненные оценки представлений родителей о выраженности
различных форм использования МУ их детьми

Бывает так, что Ваши дети пользуются мобильными устройствами, чтобы:	M (S)				r	
	Девочки	**Мальчики**	**Сиблинги разного пола**	**Общая выборка**	**Усредненный возраст детей**	**Возраст родителя**
Смотреть развлекательное видео или слушать музыку	3,84 (0,93)	3,67 (1,07)	3,89 (0,93)	3,77 (1,00)	0,08	0,02
Узнать точное время	3,75 (1,22)	3,64 (1,26)	3,77 (1,17)	3,70 (1,23)	0,20***	0,01
Найти какую-либо информацию, связанную с учебным материалом	3,73 (1,05)	3,46 (1,11)	3,68 (1,04)	3,60 (1,08)	0,32***	0,06
Сфотографировать что-то важное для выполнения домашних заданий или учебы в целом	3,53 (1,12)	3,23 (1,24)	3,48 (1,20)	3,39 (1,19)	0,27***	0,04
Выполнить учебные задания, используя функции калькулятора, секундомера, переводчика и др.	3,41 (1,09)	3,08 (1,30)	3,40 (1,05)	3,26 (1,19)	0,29***	0,09*
Блуждать по сайтам, убивать время	3,20 (1,36)	3,12 (1,32)	3,32 (1,36)	3,18 (1,34)	0,15***	0,09*
Побороть состояние скуки или раздражение	3,17 (1,26)	3,10 (1,33)	3,27 (1,18)	3,15 (1,28)	0,07	−0,02
Заниматься в образовательных и развивающих мобильных приложениях (например, обучение языку, математике и др.)	3,09 (1,10)	2,87 (1,10)	3,08 (1,02)	2,99 (1,09)	0,10*	0,05
Продолжать общаться с кем-либо с помощью приема и отправки сообщений	3,05 (1,36)	2,75 (1,32)	3,00 (1,49)	2,91 (1,37)	0,26***	0,13**
Не пропускать важные сообщения в ленте новостей своих социальных сетей	2,98 (1,39)	2,68 (1,42)	2,91 (1,46)	2,84 (1,42)	0,36***	0,16***
Восстановить в памяти какие-нибудь факты, необходимые для выполнения учебных заданий	2,87 (1,14)	2,71 (1,13)	2,89 (1,08)	2,80 (1,13)	0,28***	0,10*
Для поиска способов решения школьных заданий	2,89 (1,17)	2,64 (1,26)	2,85 (1,37)	2,77 (1,24)	0,35***	0,13**

Табл. 3. Продолжение

Сообщить вам или другим людям о важных событиях, происходящих на уроках или переменах	2,93 (1,29)	2,52 (1,32)	2,80 (1,32)	2,73 (1,32)	0,10*	−0,05
Обсуждать что-либо, не связанное с учебой, с другими людьми	2,86 (1,36)	2,52 (1,30)	2,81 (1,38)	2,70 (1,34)	0,28***	0,08
Для создания какого-либо мультимедийного продукта (визуального образа, видео-репортажа и др.)	2,76 (1,20)	2,39 (1,13)	2,70 (1,29)	2,59 (1,19)	0,18***	0,06
Играть в компьютерные игры вместо учебы	2,33 (1,37)	2,74 (1,42)	2,55 (1,23)	2,55 (1,38)	0,05	0,12**
Для навигации по местности	2,53 (1,22)	2,53 (1,21)	2,45 (1,33)	2,52 (1,23)	0,27***	−0,02
Записывать идеи или важные сведения, связанные с учебным материалом	2,45 (1,26)	2,19 (1,20)	2,39 (1,18)	2,33 (1,23)	0,26***	0,00
Списывать с других учеников или с сайтов Интернет	2,42 (1,28)	2,23 (1,26)	2,41 (1,33)	2,34 (1,28)	0,27***	0,14**
Для аргументации своей позиции в процессе обсуждения с Вами или другими людьми учебных заданий	2,09 (1,06)	1,98 (1,03)	2,10 (1,07)	2,04 (1,05)	0,31***	0,14**

Примечание: M — среднее значение; S — стандартное отклонение; r — коэффициент ранговой корреляции Спирмена; * — $p < 0,05$; ** — $p < 0,01$; *** — $p < 0,001$.

one's arguments is also seen as unpopular. The study found reliable sex-related differences in the frequency of various forms of MD use by children. The parents of girls more frequently named such forms as using educational and cognitive training mobile apps ($c^2 = 7.93$; $p = 0.02$); reporting on what is happening in school ($c^2 = 8.65$; $p = 0.01$); discussing something unrelated to the learning process with other people ($c^2 = 8.29$; $p = 0.02$); monitoring the news feed of social networks ($c^2 = 8.40$; $p = 0.02$); completing learning tasks ($c^2 = 6.86$; $p = 0.03$); keeping in touch with someone through messaging ($c^2 = 8.44$; $p = 0.01$); searching for ways to solve school tasks ($c^2 = 6.73$; $p = 0.03$); creating a multimedia ($c^2 = 8.77$; $p = 0.01$). At the same time, the parents of boys give reliably higher estimates to the frequency of MD use for playing computer games ($c^2 = 7,31$; $p = 0,03$).

The study has identified reliable relations between the parents' views about the forms of MD use by their children and the parents' age as well as the average age of all the children in the family. Importantly, the diversity in the forms of MD use correlated with children's age. This means that, as seen by their parents, older children use MDs for a much wider range of reasons. As regards using MDs for emotional regulation or the consumption of media (listening to music, watching videos, playing computer games), no correlation with a child's age was found. The parents' age was found to have a lesser impact on what they think about the forms of MD use by their children. However, the study has revealed a weak, yet reliable relationship between the parents' age and their views on MD use for cheating, computer games, browsing news feeds on social networks, cyberloafing and, on the other hand, for completing learning tasks and strengthening arguments when talking to others.

Insufficient awareness of parents about their children's forms of MD use was assessed using the parents' uncertainty index, which varied from 0 to 16 in the studied sample (M = 0.72; S = 1.78; Mo = 0; Me = 0). Specifically, the index value was higher than zero in 25.83 % of parents. The value of parents' uncertainty index was not found to be reliably dependent either on a parent's sex ($c^2 = 17.49$; $p = 0.09$), or sex ($c^2 = 11.88$; $p = 0.96$) and number ($c^2 = 7.46$; $p = 0.76$) of children in the family. Neither was it dependent on the age a child got their first MD ($c^2 = 125.25$; $p = 0.37$) or the functional features of the child's current MD ($c^2 = 33.72$; $p = 0.87$). At the same time, the study revealed insufficiently strong yet reliable correlation between the parents' uncertainty index and a parent's age ($r = 0.10$; $p = 0.02$) and the children's average age ($r = 0.10$; $p = 0.02$). In what follows we will focus on the factor structure of parents' views about the forms of MD use by their children (Table 4).

Table 4. Factor structure of parents' ideas about the forms of MD use by children and adolescents

Forms of MD use	Factors		
	1	2	3
To take a photo of something important for doing homework or for learning in general	0.70	0.17	0.30
To navigate the terrain	0.69	0.19	0.07
To write down ideas or important information related to the learning material	0.69	−0.14	0.16
To recall certain facts needed to complete learning tasks	0.66	−0.15	0.30
To find information related to the learning material	0.64	0.05	0.40
To create a multimedia (visual image, video reportage, etc.).	0.62	0.08	0.01
To view the time	0.61	0.41	0.03
To complete learning tasks (using a calculator, stopwatch, calendar, translator, etc.)	0.58	0.21	0.41
To use educational and cognitive training mobile apps (language learning, math learning, etc.).	0.52	−0.27	0.17
To report to you or somebody else about what is happening in class	0.45	0.16	0.22
To copy from other students' homework or from the internet	0.06	0.79	0.33
To search for ways to solve school tasks	0.32	0.74	0.20
To keep in touch with someone through messaging	0.26	0.61	0.40
To discuss something unrelated to the learning process with other people	0.20	0.54	0.43
To strengthen their arguments while discussing learning tasks with you or other people	0.37	0.53	−0.07
To not miss important messages in the news feed of social networks	0.37	0.50	0.27
To surf websites, wasting time	0.09	0.25	0.77
To overcome boredom or annoyance	0.03	0.21	0.75
To watch entertaining videos or listen to music	0.13	0.16	0.72
To play computer games instead of studying	−0.21	0.40	0.60
Factor Weight	4.39	3.29	3.05
% of the explained variance	21.94%	16.44%	15.24%
α — Cronbach's alpha	0.87	0.87	0.83
ω — McDonald's omega	0.88	0.87	0.84

Табл. 4. Факторная структура представлений о формах использования МУ детьми и подростками

Формы использования МУ	Факторы		
	1	2	3
Фотографировать что-то важное для выполнения домашнего задания или учебы в целом	0,70	0,17	0,30
Навигация по местности	0,69	0,19	0,07
Записать идеи или важные сведения, связанные с учебным материалом	0,69	−0,14	0,16
Восстановить в памяти факты, необходимые для выполнения учебного задания	0,66	−0,15	0,30
Найти информацию, связанную с учебным материалом	0,64	0,05	0,40
Создание мультимедийного продукта (визуального образа, видеорепортажа и др.)	0,62	0,08	0,01
Узнать точное время	0,61	0,41	0,03
Выполнить учебное задание (используя функции калькулятора, секундомера, календаря, переводчика и др.)	0,58	0,21	0,41

Табл. 4. Продолжение

Заниматься в образовательных и развивающих мобильных приложениях (например, обучение языку, математике и др.)	0,52	−0,27	0,17
Сообщить вам или другим людям о важных событиях, происходящих на уроках или переменах	0,45	0,16	0,22
Списать с других учеников или с сайтов Интернет	0,06	0,79	0,33
Поиск способов решения школьных заданий	0,32	0,74	0,20
Продолжать общаться с кем-либо с помощью приема и отправки сообщений	0,26	0,61	0,40
Обсуждать что-либо, не связанное с учебой, с другими людьми	0,20	0,54	0,43
Поиск аргументов для подтверждения своей позиции в процессе обсуждения с вами или другими людьми учебных заданий	0,37	0,53	−0,07
Отслеживать важные сообщения в ленте новостей социальных сетей	0,37	0,50	0,27
Блуждать по сайтам, убивать время	0,09	0,25	0,77
Побороть состояние скуки или раздражение	0,03	0,21	0,75
Смотреть развлекательное видео или слушать музыку	0,13	0,16	0,72
Играть в компьютерные игры вместо учебы	−0,21	0,40	0,60
Вес фактора	4,39	3,29	3,05
% объясненной дисперсии	21,94%	16,44%	15,24%
α — Альфа Кронбаха	0,87	0,87	0,83
ω — Омега Макдональда	0,88	0,87	0,84

The factor analysis identified the structure of parents' views about the forms of MD use by their children. It explains 53.62 % of the overall dispersion. The first factor is behind 21.94 % of the overall dispersion. It includes the use of MDs for a school student's learning and everyday activities. This factor embraces the possibilities of using MDs to complete learning tasks, find the learning material and make relevant notes, find out time or way, show creativity through writing down ideas or important information related to the learning material or creating a multimedia as an outcome of learning. Hence, this factor was called *'Facilitating the learning activity'.*

The second factor explains 16.44 % of the overall dispersion. It embraces those forms of MD use that have a destructive effect on learning, e. g., academic cheating or switching from learning to unrelated activities (texting, browsing social networks). At the same time, this factor includes using MDs to strengthen one's arguments when communicating with others. This form of MD use is seen by parents as children's failure to engage in independent thought process, hence, they see it as having a destructive effect on learning. Overall, contenwise, this factor is referred to as *'Distraction from learning'.*

Finally, the third factor, responsible for 15.24 % of the overall dispersion, comprises escapist forms of MD use. This implies the use of MDs as an escape from problems, including meaningless browsing, playing computer games, watching entertaining videos, and listening to music. In this case the content is far from being educational and does not contribute whatsoever to a child's educational or personal development. Hence, the name of the factor — *'Substituting the learning activity'.*

Overall, we have identified three dimensions of parents' views about the use of MDs by their children. Among them are facilitation, distraction and substitution of learning activity. The internal consistency test of the identified dimensions showed satisfactory reliability. This allowed for their use as independent scales.

The final stage of the study was a regression analysis to identify the predictors of aggregate dimensions of parents' views about MD use by their children (Table 5).

The regression analysis revealed that parents' views about the forms of MD use by children are largely driven by parents' digital mediation behavior and their attitude to technology. Thus, parents who are positive about the technology and do not restrict children from using it tend to note constructive forms of MD use. Interestingly, this is more common for mothers of two or more children, while the children tend to be more grown-up. Unlike the ideas about the facilitating role of MDs, the two remaining dimensions related to the destructive effect of MDs are driven by two contrasting

Table 5. Regression analysis results

Independent variables	β	Std. er. β	B	Std. er. B	t	p
Regression results for the dependent variable "Augmenting learning activity": R = 0.51; R² = 0.26; Adjusted R2 = 0.24; F(13.515) = 13.79; p < 0.00; Std. error: 14.26						
intercept			26.19	8.54	3.07	0.00
Mean age of children	0.36	0.05	2.01	0.27	7.52	0.00
Positive attitudes	0.23	0.05	0.24	0.05	4.81	0.00
Restrictions and prohibitions	−0.12	0.06	−0.11	0.05	−2.04	0.04
Number of children in the family	0.09	0.04	3.99	1.64	2.43	0.02
Parent's sex	−0.08	0.04	−4.85	2.35	−2.06	0.04
Regression results for the dependent variable "Distracting from learning activity": R = 0.45; R² = 0.20; Adjusted R2 = 0.18; F(13.515) = 10.11; p < 0.00; Std. error: 19.80						
intercept			7.06	11.86	0.60	0.55
Comfort of parent mediation	−0.22	0.04	−0.25	0.05	−5.13	0.00
Mean age of children	0.28	0.05	2.08	0.37	5.60	0.00
Permissive	0.17	0.05	0.20	0.06	3.55	0.00
Negative attitudes	0.11	0.05	0.14	0.06	2.20	0.03
Regression results for the dependent variable "Substituting learning activity": R = 0.45; R² = 0.20; Adjusted R2 = 0.18; F(13.515) = 9.96; p < 0.00; Std. error: 18.99						
intercept			27.72	11.38	2.44	0.02
Comfort of parent mediation	−0.28	0.04	−0.30	0.05	−6.53	0.00
Permissive	0.23	0.05	0.26	0.05	4.85	0.00
Negative attitudes	0.20	0.05	0.23	0.06	3.88	0.00
Restrictions and prohibitions	0.21	0.06	0.24	0.07	3.44	0.00
Age when the child got his or her first MD	−0.19	0.04	−1.18	0.56	−2.10	0.04

Табл. 5. Результаты регрессионного анализа

Независимые переменные	β	Ст. ош. β	B	Ст. ош. B	t	p
Итоги регрессии для зависимой переменной «Дополнение возможностей в решении учебных и повседневных задач»: R = 0,51; R² = 0,26; Скоррект. R2 = 0,24; F(13,515) = 13,79; p < 0,00; Станд. ошибка оценки: 14,26						
Св. член			26,19	8,54	3,07	0,00
Усредненный возраст детей	0,36	0,05	2,01	0,27	7,52	0,00
Позитивные установки	0,23	0,05	0,24	0,05	4,81	0,00
Ограничения и запреты	−0,12	0,06	−0,11	0,05	−2,04	0,04
Количество детей в семье	0,09	0,04	3,99	1,64	2,43	0,02
Пол родителя	−0,08	0,04	−4,85	2,35	−2,06	0,04
Итоги регрессии для зависимой переменной «Отвлечение от учебной деятельности»: R = 0,45; R² = 0,20; Скоррект. R2 = 0,18; F(13,515) = 10,11; p < 0,00; Станд. ошибка оценки: 19,80						
Св. член			7,06	11,86	0,60	0,55
Комфортность родительской медиации	−0,22	0,04	−0,25	0,05	−5,13	0,00
Усредненный возраст детей	0,28	0,05	2,08	0,37	5,60	0,00
Потворствование	0,17	0,05	0,20	0,06	3,55	0,00
Негативные установки	0,11	0,05	0,14	0,06	2,20	0,03

Табл. 5. Продолжение

Итоги регрессии для зависимой переменной «Замещение учебной деятельности»: R = 0,45; R² = 0,20; Скоррект. R2 = 0,18; F(13,515) = 9,96; p < 0,00; Станд. ошибка оценки: 18,99						
Св. член			27,72	11,38	2,44	0,02
Комфортность родительской медиации	−0,28	0,04	−0,30	0,05	−6,53	0,00
Потворствование	0,23	0,05	0,26	0,05	4,85	0,00
Негативные установки	0,20	0,05	0,23	0,06	3,88	0,00
Ограничения и запреты	0,21	0,06	0,24	0,07	3,44	0,00
Возраст начала владения ребенком МУ	−0,19	0,04	−1,18	0,56	−2,10	0,04

strategies. The ideas about the distracting role of MDs are due to the parents' permissive mediation and their negative attitudes to MDs. Another significant predictor is the age of children in a particular family. In case of 'substitution', permissiveness is combined with limitations and restrictions as well as a negative attitude to mobile technology. An important factor here is the age a child got their first MD. Importantly, in both cases the degree of comfort of parents' mediation is a more significant predictor of their views about the destructive forms of MD use by schoolchildren.

Discussion

The study provided insights into parents' views about how their children use MDs. Parents recognize both constructive and destructive forms of MD use. This may indicate the ambivalence of their ideas about the possibilities of MDs in improving the effectiveness of children's leaning and everyday activities. Along with that, about a quarter of the study participants found it difficult to define the frequency of MD use. Similar evidence was obtained from prior research that revealed parents' uncertainty, low awareness and expertise in understanding digital practices of their children (Kostina, Novikova 2022; Ponukalina 2020). This is especially true of older parents. In this case, the digital generation gap is still wide unlike in the case of younger generation of parents who were born digital natives (Soldatova et al. 2022).

The study identified that the parents' views about the forms of MD use by their children depend on children's sex. Girls' parents tend to see MDs as a means of communication and sources of media content, while boys' parents highlight their children's involvement in computer games. This sex-related differentiation corresponds to the results of research on media consumption patterns in children and adolescents. See, for example (Brito, Dias 2019) for the research focusing on children, and (Son et al.

2021; Taywade, Khubalkar 2019) with the focus on adolescents. All the referenced studies highlight the girls' tendency to use MDs for social networking and communication, while the boys are described as more interested in computer games. A range of studies (Claesdotter-Knutsson et al. 2021; Taywade, Khubalkar 2019) indicate that girls are more likely to overuse MDs. This is also evidenced by the results of our study where, according to the parents' estimates, girl generally tend to use MDs more often than boys. At the same time, girls' parents are more likely to indicate that their children use MDs to facilitate learning.

The children's age was another significant factor the contributed to parents' views about the forms of MD use by their children. Overall, adolescents' parents describe their children as engaged MD users with MDs used for multiple purposes. Unlike adolescents, younger children use MDs under considerable parental control. They have stronger bonds with their parents as compared to adolescents and while adolescents represent one of the most active groups of MD users, the digital practices in younger children are only emerging (Slinkina, Myagotin 2020). Apparently, the research findings reflect quantitative transformations in the development of 'hyperconnected technologically complete digital personality as part of the real personality that functions in the mixed (convergent) reality and digital social environment' (Soldatova et al. 2022, 7). Along with that, the study indicates that these are the parents of adolescents that fail to show consistency in the mediation of their children's digital practices. Those parents who believe that MDs distract their children from learning have a negative attitude to mobile technology, yet, they tend to encourage the established patterns of MD use in their children with no attempts, whatsoever, to reduce the negative impact. This might be referred to as 'parents' helplessness' — parents' negative attitude to mobile technology does not result in any effort to educate their children on MD use giving them uncontrollable power to use MDs as they please.

The parents' views about MDs as substitution of learning are underpinned by even more contradictory attitudes. Having a negative attitude to mobile technology, parents restrict the use of MDs, while simultaneously encouraging the use of MDs and providing their children with an MD at an earlier age. Importantly, in both cases the relationship between parents and children is marked by certain tension and parents' attempts to mediate their children's digital practices causes discomfort. The study found that parents who see constructive aspects of MDs as a means of solving learning and everyday tasks are generally positive about the mobile technology as well. They less often restrict or prohibit the use of MDs and do not experience discomfort related to their mediation of children's digital practices. As a rule, such families have two or more children.

In general, parents' views about constructive and destructive forms of MD use by their children depend on their personal attitude to mobile technology and the level of comfort with mediation practices. A similar trend was found in teachers whose ideas about the forms of MD use by schoolchildren depended on their personal attitude to mobile technology (Spasskaya, Projekt, 2023). It is fair to claim that the convictions that parents have about mobile technology shape their perception of their children's digital practices. This may result in a one-sided approach to digital socialization of children and the emergence of intergenerational conflicts on the path of digital transformation of modern living environment.

Conclusion

Parent-child relationships are one of the key factors in the development of a child's psyche. The quality and depth of the parent-child relationship during digital socialization may play an important role in risk prevention and effective development of digital literacy in children. These are parents who mentor and guide their children as they master the digital environment. It is due to parents that children learn how to balance between online and offline activities, acquire digital competences and skills in the secure use of MDs.

The reported study aimed to explore parents' views about the forms of MD use by their children. It also aimed to find out how parents' attitudes to mobile technology and the specifics of parental mediation of digital behavior of their children impacted their views about the forms of MD use. The study found that parents see both constructive and destructive forms of MD use by children. The structure of parents' views about the forms of MD

use by their children includes three dimensions: facilitating, substituting and distracting from learning activity. Parents who claim that MDs have a destructive impact on learning tend to have a negative attitude to mobile technology and contradictory patterns in mediation of children's digital practices. Parents with a positive attitude to mobile technology believe that MDs facilitate their children's learning. Such parents show a higher degree of comfort in the mediation of their children's digital behavior.

The study results outline the prospects for future psychological and awareness-raising work with parents aimed at the development of parental competence in the digital socialization of children and harmonization of parent-child relationships in the context of digital consumption. Psychological and awareness-raising initiatives targeting parents of schoolchildren include the implementation of digital literacy programs, development of critical thinking, workshops on constructive parent-child interaction in the field of digital consumption, parental engagement in the development of children's digital skills and practices of save Internet use.

Conflict of Interest

The authors declare that there is no conflict of interest, either existing or potential.

Конфликт интересов

Авторы заявляют об отсутствии потенциального или явного конфликта интересов.

Ethics Approval

The authors declare that the study complies with all ethical principles applicable to human and animal research.

Соответствие принципам этики

Авторы сообщают, что при проведении исследования соблюдены этические принципы, предусмотренные для исследований с участием людей и животных.

Author Contributions

The authors have made an equal contribution to the preparation of the manuscript.

Вклад авторов

Авторы внесли равный вклад в подготовку рукописи статьи.

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