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The relationship between anxiety and the type of digital content consumed in the older preschool age

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Abstract

Context and relevance. In the context of the active digitalization of modern society, preschoolers regularly interact with digital content, including material that is age-inappropriate. Despite the widespread use of digital media, the relationship between childhood anxiety and the type of content consumed by preschool children remains insufficiently studied, which highlights the scientific and practical relevance of this study. **Objective.** Identification of the interrelationships between anxiety and the type of digital content consumed in older preschool children. **Hypothesis.** Children who consume age-inappropriate digital content have higher levels of anxiety than children who do not consume such content. **Methods and materials.** The study involved 155 children aged 6–7 years ($M = 6,8$; $SD = 0,29$), pupils of preparatory groups of kindergartens in Moscow, among them 49,7% boys, as well as 60 mothers of preschoolers. During the study, a semi-structured interview was conducted with children about the content consumed, as well as an anxiety test (Tamml, Dorky, Amen, 2002). Parents were asked to complete a questionnaire to determine the level of anxiety in children (Lavrentieva, Titarenko, 1992). **Results.** Based on the responses received from preschoolers during the interview, all children were divided into three groups according to the type of content consumed. It was found that in the group of children who consume age-inappropriate content, there are significantly more preschoolers with high levels of anxiety than in the group of children who do not consume such content. In addition, it was found that among children who consume age-inappropriate content, as well as among children with higher levels of anxiety, there are significantly more boys than girls. **Conclusions.** The study confirmed the link between the consumption of age-inappropriate digital content and higher rates of anxiety in preschoolers.

Keywords: preschool age, anxiety, digital devices, digital content, media content, video games

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Взаимосвязь тревожности с типом потребляемого цифрового контента в старшем дошкольном возрасте

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Резюме

Контекст и актуальность. В условиях активной цифровизации современного общества дошкольники регулярно взаимодействуют с цифровым контентом, включая контент, не соответствующий возрастным нормам. Несмотря на широкую распространенность данной практики, проблема взаимосвязи детской тревожности с типом потребляемого цифрового контента у детей дошкольного возраста остается недостаточно изученной, что подчеркивает научную и практическую актуальность настоящего исследования. **Цель.** Выявление взаимосвязей между тревожностью и типом потребляемого цифрового контента у детей старшего дошкольного возраста. **Гипотеза.** У детей, потребляющих цифровой контент, не соответствующий возрасту, более высокий уровень тревожности, чем у детей, не потребляющих подобный контент. **Методы и материалы.** В исследовании приняли участие 155 детей в возрасте 6–7 лет ($M = 6,8$; $Sd = 0,29$), воспитанники подготовительных групп детских садов г. Москвы, среди них 49,7% мальчиков, а также 60 мам дошкольников. В ходе исследования с детьми было проведено полуструктурированное интервью о потребляемом контенте, а также Тест тревожности (Тэммл, Дорки, Амен, 2002). Родителям было предложено заполнить Опросник на определение уровня тревожности у детей (Лаврентьева, Титаренко, 1992). **Результаты.** На основе ответов, полученных от дошкольников в ходе интервью, все дети были разделены на три группы по типу потребляемого контента. Было установлено, что в группе детей, потребляющих контент, не соответствующий возрасту, значимо больше дошкольников с высоким уровнем тревожности, чем в группе детей, не потребляющих подобный контент. Кроме того, было обнаружено, что среди детей, потребляющих не соответствующий возрасту контент, а также среди детей, имеющих более высокий уровень тревожности, значимо больше мальчиков, чем девочек. **Выводы.** Проведенное исследование подтвердило наличие связи между потреблением не соответствующего возрасту цифрового контента и более высокими показателями тревожности у дошкольников.

Ключевые слова: дошкольный возраст, тревожность, цифровые устройства, цифровой контент, медиаконтент, видеоигры

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Introduction

Preschoolers are currently active users of digital devices (Nikolaeva et al., 2023; Guseva, Bukhalenkova, Morozova, 2025): they watch films, cartoons, and entertainment and educational videos, as well as play video games (Chu et al., 2024; Edwards, 2023). However, at preschool age, children still lack a sufficient level of self-reflection (Veraksa et al., 2023), which makes them particularly susceptible to the content they consume.

The situation is further complicated by changes in the digital environment of today's preschool children. Whereas children used to watch television programmes that had been vetted by experts and carried age ratings, online video platforms (such as Rutube and similar sites) are now becoming increasingly popular, where content is uploaded without strict oversight (Henderson et al., 2024). This leads to the emergence of a large amount of low-quality content lacking information on age restrictions. A video or cartoon that appears harmless on the surface may contain age-inappropriate content, including scenes of cruelty and violence (Henderson et al., 2024; Radesky et al., 2024; Pattee, 2022). Such changes in the digital socialisation of today's preschool children pose new risks to their emotional well-being, which necessitates specific research and the development of preventive measures. In light of this, the aim of this study was to identify the relationships between anxiety and content consumption among older preschool children.

Anxiety in older preschool children

Situational anxiety is most common among preschool children, arising as a short-term reaction to specific stressful events (Prikhodzhan, 2007). It acts as a signal of a potential threat, indicating possible

difficulties on the path to achieving a goal, and helps to mobilise the resources needed to overcome them. In cases where anxiety exceeds the optimal level, this leads to maladjustment: the child loses the ability to act effectively and control their behaviour (Prikhodzhan, 2007).

Anxiety, as a stable personality trait, develops gradually and is rarely observed in preschool children (Prikhodzhan, 2007). However, if, as a child grows up, they begin to perceive a fairly wide range of situations as threatening and systematically react to them with anxiety, these experiences become entrenched over time and develop into a personality trait. According to A.M. Prikhodzhan (2007), the main cause of the development of anxiety is negative emotional experience: the child becomes fixated on failures, whilst stressful situations reinforce the anxiety. Changes in the family situation, inconsistent upbringing and social instability play an important role in the development of anxiety (Prikhodzhan, 2007; Kazakova, Sokolova, 2021). Furthermore, the quality of the content consumed by preschool children can also have an emotionally traumatic effect and be a factor in the development of anxiety and fears in children, as the consumption of digital content has become a regular part of modern preschoolers' lives (Nikolaeva et al., 2023; Kurgansky, Guryanova, Khramtsov, 2023), whilst the children themselves and their parents do not always choose high-quality, age-appropriate content (Proekt et al., 2025; Smirnova, Klopotova, 2023).

The relationship between children's anxiety and their consumption of digital content

Digital content with which a child interacts can be divided into age-appropriate

and age-inappropriate content. Age-inappropriate content is defined as content that is harmful to children's health and development (Federal Law No. 436-FZ of 29 December 2010). Such content, being difficult for preschool children to understand, creates a potentially threatening environment, which may lead to an increase in the child's fears and a high level of anxiety (Kim et al., 2020; Kruuse, Kalmus, 2016; Pearce, Field, 2015).

In their meta-analysis, Pearce and Field (2015) drew attention to the concept of "scary" content and defined it as media content that depicts situations and events in which there is a real or imagined social, interpersonal, physical or psychological threat. In children aged 3 to 8, fear is most often triggered by visually grotesque characters, such as ghosts, witches and monsters (Wilson, 2008). Although the feeling of fear serves important functions, contributing to a child's emotional development (Shiyan, 2022; Reynolds, Zipes, 2008), the systematic consumption of frightening digital content, without emotional support and explanations from an adult, increases the risk of developing persistent anxiety (Rideout, Robb, 2020).

At present, there is very little research into the link between anxiety and the type of content consumed during the preschool years. A meta-analysis by Pearce and Field (2015) identified a small but significant effect of "scary" content on emotions such as fear, anxiety and sadness in children under the age of 10 (Pearce, Field, 2015).

A number of studies involving a sample of primary school-aged children of similar ages have found that children may perceive the video content they have watched — including fictional plots and pseudo-realistic scenes, such as those in

crime films — as a personally significant threat (Kruuse, Kalmus, 2016; Valkenburg, 2000). A study by Korhonen and Lahikainen (2008) had previously found that 80 per cent of 5–6-year-olds experienced fears after watching television; however, over the course of 10 years (1993–2003) there was a significant increase in the number of fears caused by children's programmes and fictional characters, and a significant decrease in the number of fears caused by programmes intended for adults. The authors attributed this to the rise in the number of children's programmes broadcast on television, the increase in scenes of violence within them, and a decline in parental supervision — by giving children the freedom to choose cartoons and television programmes, parents did not anticipate that their content might prove frightening and unsuitable for their age (Korhonen, Lahikainen, 2008).

This theoretical review leads to the conclusion that the limited number of studies available suggests a link between an increased number of fears in children and their exposure to age-inappropriate, frightening content (Kruuse, Kalmus, 2016; Pearce, Field, 2015; Korhonen, Lahikainen, 2008); however, there are virtually no such studies concerning anxiety levels in preschool children. Consequently, the aim of this study was to identify the relationships between anxiety and the content consumed by children in the older preschool age group. Since the number and intensity of fears at this age influence the development of anxiety as a more stable emotional state, we formulated the hypothesis that children who consume age-inappropriate content have higher levels of anxiety than those who do not consume such content.

Materials and methods

Sample

The study involved 155 children aged 6–7 ($M = 6,8$; $SD = 0,29$) attending preparatory groups in Moscow (Russia) kindergartens, of whom 49,7% were boys. The study also included 60 mothers of these preschoolers.

Methods

To investigate the characteristics of the digital content consumed by preschool children, a semi-structured interview was developed, which included questions about watching video content and, in a similar vein, about playing digital games:

1. Do you use a computer/mobile phone/tablet? What do you use it for?

2. What games do you like to play on your computer/tablet/mobile phone? / What do you like to watch? (We asked the children to specify the titles and genres, and to describe the content of the digital material).

3. Do you play scary games? / Do you watch scary films, cartoons or videos?

If the child answered in the affirmative, they were asked further clarifying questions:

a. Do you like playing scary games / watching scary films, cartoons or videos? Why?

b. What sort of scary games do you play? What do you have to do in them? / What sort of scary films, cartoons or videos do you watch? What happens in them?

c. How often do you play scary games / watch scary films, cartoons or videos? (If the child found it difficult to answer or their answer was unclear, we would ask for clarification as to whether this happened every day or how many times a week or a month).

This method of collecting data on content consumption was used because it

provides information about the child's own personal experiences and preferences in the digital environment.

The following methods were used to assess the level of anxiety in preschool children:

The Anxiety Test (Tammle, Dorkey, Amen, 2002). In this test, children are shown 14 pictures depicting situations typical of their daily lives. The pictures show children; the outline of the head is drawn, but the face is not visible. Below are two children's faces: one happy and one sad. The child must select the face that is appropriate for the situation. Based on the data from the test report, the child's anxiety index (AI) is calculated, which is equal to the percentage of emotionally negative choices (the sad face) out of the total number of pictures. Depending on their AI level, children are divided into three groups: high anxiety (AI above 50 per cent); moderate anxiety (AI between 20 and 50 per cent); and low anxiety (AI between 0 and 20 per cent).

A questionnaire for assessing anxiety levels in children (Lavrentieva, Titarenko, 1992) was presented to the parents of preschool children. The questionnaire comprises 20 statements, to which respondents can answer "yes" if they agree and "no" if they disagree. Following completion of the questionnaire, the total number of positive responses is calculated and the corresponding level of anxiety is determined: 1–6 points — low level, 7–14 points — moderate level, 15–20 points — high level of anxiety.

Research procedure

The assessment was carried out individually with each child in a quiet room for between 15 and 20 minutes. First, a

semi-structured interview was conducted with the child, followed by the Anxiety Test (Tammle, Dorkey, Amen, 2002).

Parental questionnaires designed to assess children's levels of anxiety were distributed via group teachers and completed by parents on a voluntary basis at a time convenient to them; as a result, questionnaires were returned for only a portion of the sample ($N = 60$).

Statistical analysis

Statistical analysis was carried out using SPSS 27.0. The Pearson's chi-square test (χ^2) was used to examine associations between gender, anxiety levels and the type of content consumed. The Mann-Whitney U test was used to examine differences in anxiety scores between parents and children. The Kruskal-Wallis test (H) was used to compare levels of anxiety between groups of children consuming different types of content.

Results

Results of an analysis of the digital content consumed by preschool children

As a result of the interviews on content consumption, the responses to questions about what children prefer to watch or play, as well as those regarding frightening digital content, were analysed. Based on these responses, the children were divided into three groups according to the type of content they consumed.

1) Do not consume age-inappropriate content — 27,1%. Children in this group typically watched children's cartoons rated 0+ to 6+ (for example, "Three Cats", "KikoRiki"), as well as playing digital games in the same age category (e.g. "Hot Wheels", "Talking Tom Gold Run") and using educational apps (Chess, Maths Games).

2) Consume age-inappropriate content with age ratings of 12+ or lower — 36,8 per cent. In this group, children generally mentioned films, cartoons, videos and games that do not contain elements likely to provoke a strong emotional reaction in a child or frighten them; however, they do feature scenes of fighting and killing that, whilst not particularly detailed or realistic, are still not intended for children aged 6–7 (for example, the cartoon "Gravity Falls", Marvel films, "Transformers", and the games "Minecraft" and "Brawl Stars").

3) Consume age-inappropriate content with age restrictions starting at 16+, as well as content in the horror and/or shooter genres — 36,1%. Children in this group were more likely to mention the films and videos they watched, whilst mentioning cartoons significantly less often (for example, "Twilight" (16+), "Cocaine Bear" (18+)). When it came to games, preschoolers in this group frequently mentioned horror games ("Poppy PlayTime", "Hello Neighbour", "Granny") and shooter games ("Standoff", "GTA", "Mortal Kombat").

This distribution was obtained by analysing the children's responses to questions about the video content they consumed and to questions about the gaming content they consumed separately. If a child's answers to questions about video and gaming content fell into different categories, they were classified in the category with the higher age rating (for example, if a child mentioned watching the TV series "The Boy's Word: Blood on the Asphalt" (18+) and plays Roblox (12+), they were classified as part of the group of children consuming age-inappropriate 16+ content).

It was found that, among children who consume age-inappropriate content, there are significantly more boys than girls ($\chi^2 = 20,243$, $p = 0,000$) (see Table 1).

Table 1

Distribution of boys and girls into groups based on responses about consumed content (%)

Preschoolers who consume:	Boys	Girls
Контент, соответствующий возрасту / Age-appropriate content	14,3	39,7
Content 12+	33,8	39,7
Content 16+	51,9	20,5

Results of an assessment of anxiety levels in preschool children

According to the results of the Anxiety Test, 2,6% of the sample were classified as having a low level of anxiety; 67,6% as having a moderate level; and 29,7% as having a high level. As the group of children with a low level of anxiety was very small, it could not be included in further analysis using Pearson's chi-square test.

An analysis of the frequency distribution among children with moderate and high levels of anxiety revealed significant gender differences: there were significantly more boys than girls among children with high levels of anxiety ($\chi^2 = 4,280$; $p = 0,039$) (see Table 2).

According to the results of the Parental Questionnaire for Assessing Anxiety Levels, parents identified, on average, 6 different manifestations of anxiety in their children out of a possible 20 ($M = 6,08$; $SD = 4,364$). According to the criteria established by G.P. Lavrentyeva and T.M. Titarenko (1992), 52,5% of children were classified as having a low level of anxiety, 45,8% as having a moderate level, and 1,7% as having a high level. As only one child was classified as having a high

level of anxiety, the analysis of differences was carried out using raw scores from this method. The analysis revealed no significant differences in the number of anxiety symptoms reported by parents among children with different levels of anxiety ($U = 70,000$; $p = 0,457$), suggesting no correlation between the results obtained using the Parents' Questionnaire and the Anxiety Test.

An analysis of the relationship between anxiety and the consumption of age-inappropriate content

To test the hypothesis regarding the link between anxiety levels and the consumption of age-inappropriate content, an analysis was carried out of the frequency distribution among children with moderate or high levels of anxiety who view different types of content. Significant differences were found: children with high levels of anxiety were more likely to consume age-inappropriate content ($\chi^2 = 19,400$, $p = 0,000$) (see Table 3).

Furthermore, no significant differences were found in the number of anxiety symptoms (as measured by the Parents'

Gender differences in anxiety levels (%)

Anxiety level	Boys	Girls
Middle	61,8	77,3
High	38,2	22,7

Table 2

Table 3

Distribution of children by anxiety levels and content consumed (%)

Preschoolers who consume:	Anxiety level	
	Middle (N = 109)	High (N = 45)
Age-appropriate content	32,4	13,0
Content 12+	41,9	23,9
Content 16+	25,7	63,0

Questionnaire) between groups of children consuming different types of content (Kruskal–Wallis test, $H = 1,100$, $p = 0,576$).

Discussion

The results of a semi-structured interview conducted with children indicate that more than half of today’s preschoolers consume content that is inappropriate for their age, which once again highlights the importance and relevance of studying its impact on children’s emotional development.

The study tested the hypothesis that children who consume age-inappropriate content have higher levels of anxiety than those who do not consume such content. The results support this hypothesis: the consumption of age-inappropriate content was found to be significantly associated with high levels of anxiety among preschool children. Among children who consume 16+ content, more than half have high levels of anxiety. We hypothesise that when children engage with frightening video and gaming content, they may perceive fictional stories as real and feel a potential threat (Kruuse, Kalmus, 2016; Pearce, Field, 2015; Andersen et al., 2020). Previous research suggests that, when immersed in a narrative, a preschooler may experience profound feelings of fear and anxiety when confronted with realistic threats, violence and cruelty on screen (Kruuse, Kalmus, 2016; Pearce and Field, 2015). However, the correlational design

of the study does not allow for the establishment of a cause-and-effect relationship. The observed correlation allows for alternative interpretations: it is possible that children with an inherently high level of anxiety deliberately choose more frightening content as a way of coping with emotional stress (Taranu et al., 2025; Milani et al., 2020). Furthermore, the influence of third variables, such as parenting style or the child’s temperament, cannot be ruled out; these may simultaneously affect both anxiety levels and the choice of digital content (Fitzpatrick et al., 2024; Rudnova et al., 2023).

The results obtained using the Parental Questionnaire to assess anxiety levels (Lavrentieva, Titarenko, 1992) did not reveal any significant differences in the severity of anxiety among preschool children depending on the type of content consumed, nor did they show any correlation with the Anxiety Test administered to preschool children. This can be explained by the fact that anxiety, being a state experienced primarily internally, may go unnoticed by parents (Prikhozhan, 2007; Zakharov, 2000; Pearce, Field, 2015). Furthermore, data from parents were obtained for only a small proportion of the sample ($N = 60$), which highlights the need to further validate the findings using a more representative sample. In addition, the Parent Questionnaire also requires further validation and additional testing of its validity

(Ivanova, Evtushenko, Artemenko, 2021; Korabelnikova, 2020).

The results of the present study also showed that anxiety levels are significantly higher among boys than among girls. Previous research by both Russian and international researchers has shown that girls in the older preschool age group generally had higher levels of anxiety than boys (Prikhozhan, 2007; Zakharov, 2000; Muris et al., 2000). In our view, this finding may be linked to another gender difference identified: according to their responses, boys consume age-inappropriate content (particularly 16+) significantly more often than girls. It can therefore be hypothesised that it is precisely the consumption of age-inappropriate content that may be the cause of the gender differences identified. However, it is not possible to draw a conclusion about a clear cause-and-effect relationship in this case. It is possible that boys were more likely than girls to report consuming “scary” content, as this may serve as a way for them to demonstrate ‘adulthood’ and bravery, whilst girls may have kept such digital experiences to themselves due to social desirability (Qiu, Yoke, 2024). Nevertheless, during the interviews, a quarter of the children mentioned having nightmares featuring characters from horror games (Freddy the Bear, Granny, the Grey-Headed Man, etc.), which confirms that they had actually been exposed to such digital content.

Conclusions

The study confirmed the hypothesis that children who consume age-inappropriate content have higher levels of anxiety than those who do not consume such content. A positive correlation was found between anxiety levels and the consumption of age-inappropriate digital content among older

preschool children. It was also found that boys consume age-inappropriate content significantly more often than girls and also exhibit higher levels of anxiety.

The findings of this study, together with the theoretical review, have enabled us to draw up a number of recommendations for parents and teachers.

Firstly, when choosing video and gaming content for a child, it is important to advise parents to pay attention to age ratings. Content with an age rating of 6+ is best suited for preschool children. If no such rating is available, it is advisable to review the content of the film, cartoon, video or game yourself: you should look out for scenes of cruelty and violence, foul or coarse language, and emotionally intense scenes (frightening images, unsettling music, jump scares). If your child uses modern online video and gaming platforms (Rutube, Roblox, Yandex Games, etc.), it is advisable to familiarise yourself with the parental control features to hide from your child any videos or games intended for adults and subject to the relevant age restrictions.

Secondly, it is important to watch programmes and play digital games together with your child — this will allow parents to explain, in good time, any parts that the child finds confusing or frightening, which will help to reduce tension and minimise the likelihood of fears arising.

Limitations. Our study has several limitations. First, the sample was limited to kindergarten students from Moscow, which narrows the possibilities for generalizing the results due to the specific characteristics of a large metropolis.

Second, some additional variables were not accounted for in the study. For instance, the study did not consider factors of screen time and parental mediation, which

may mediate the identified relationships (Belova, Shumakova, 2024; Rudnova et al., 2023; Wu et al., 2025). Furthermore, some personal factors that could also influence the relationship between the type of content and the level of anxiety in children were not considered. The study should have accounted for the type of temperament of preschoolers, which may be related to their impressionability and the degree of influence of age-inappropriate content on them (Rudnova, Kornienko, 2023; Liu, Bell, 2020; Fitzpatrick et al., 2024). Moreover, the type of their attachment may influence this relationship: children with an insecure attachment type more often demonstrate increased anxiety, difficulties in emotional regulation, and a more acute reaction to stressful factors (Savchenko, Petrakova, Siyan, 2025; Kuftyak, 2020). Finally, the study did not control for indicators of preschoolers' cognitive development, which affect the understanding of the content and plot of digital content. Children with higher cognitive development are better at distinguishing a fantastic plot from a real one, understand cause-and-effect relationships, and can predict the end of a scary scene, which reduces the intensity of fear when encountering frightening content (Sobkin et al., 2025; Zaporozhets, 1986; Valkenburg et al., 2000).

Third, the data on consumed digital content collected by the interview method may not be completely reliable and valid. When answering direct questions about “scary” digital content, preschoolers could distort information. On the one hand, children could name films/videos or games popular among their peers and surrounding adults that they were not really familiar with, and on the other, they could keep silent about the “adult” or “scary” content consumed due to social desirability. At the same time, collecting information about the content consumed by children from parents also has limitations related to even greater social desirability bias than among children, as well as parents often not knowing what their children are watching (Türen, Bağçeli Kahraman, 2025). In this regard, we consider our chosen method of obtaining information about the content consumed by preschoolers to be the most appropriate for this study.

Prospects for further research are associated with the inclusion of additional variables in the analysis, such as screen time, parental mediation, the child's temperament type, etc. In addition, the obtained results require verification on more representative samples that account for sociocultural diversity.

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Daria A. Bukhalenkova — ideas; research planning; annotating, writing, and formatting the manuscript.

Malikat Sh. Mikhitaeva — planning of the research; data collection and analysis; application of statistical, mathematical or other methods for data analysis; writing and design of the manuscript.

All authors participated in the discussion of the results and approved the final text of the manuscript.

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Бухаленкова Д.А. — идеи исследования; планирование исследования; аннотирование, написание и оформление рукописи.

Михитаева М.Ш. — планирование исследования; сбор и анализ данных; применение статистических, математических или других методов для анализа данных; написание и оформление рукописи.

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The authors declare no conflict of interest.

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