



Excessive Electronic Media Use: The Effects on Preschoolers' Development of Emotion and Social Relationships

Yuhong Xiong^(✉)

The College of Translation and Interpreting, Sichuan International Studies University,
Xianshan Road, Bishan District, Chongqing 402764, China
beatrice_xyh@stu.cpu.edu.cn

Abstract. Along with the rapid growth of technology, the excessive electronic media use of people has been much heralded in recent years. E-media is changing people's lifestyles and the ways to interact with others. More and more children are getting access to electronic devices, even at younger ages. Therefore, the purpose of this study is to summarize recent advances in the impacts of excessive e-media use on the psychological development of preschoolers aged 0 to 6, with a particular focus on their development of emotion and social relationships. The general negative effect of excessive usage of e-media on toddlers was highlighted in previous studies, as well as summarized in this study. However, little research investigates the specific effects of unreasonable e-media use on preschoolers' emotions and social relationships and the further consequences. Concerning emotional development, preschoolers with high e-media exposure may have a higher risk of anxiety and depression mediated by sleep quality. Moreover, excessive e-media use can be a source of tension in the family due to negative emotional control and parent-child conflicts caused by electronic products. Also, it can affect peer relationships related to less communication with peers and the violent content in videos.

Keywords: E-media · Preschoolers · Anxiety · Depression · Social relationships

1 Introduction

Electronic media (e-media) has grown increasingly prominent in children's daily lives as digital technology has advanced rapidly in recent years. The age of first use of e-media has continued to decline, as 78% of children first exposed to e-media at or below the age of 10 are mainly 6 to 10 years old and even about 90% of children use electronic media for the first time at the age of 1–2 [1]. Besides, despite the number of using digital devices remaining stable, the pattern of using e-media has shifted impressively recently, as preschoolers' e-media use has significantly increased between 2013 and 2017 [2]. However, the research on the effects of using e-media on children has lagged far behind their popularity [3].

The use of electronic media refers to a series of screen time comprised of watching videos on TV, DVDs, and mobile devices such as smartphones, tablets, and watches, as well as surfing the internet through various social media and electronic games. Although young children might benefit from reasonable e-media with some educational content within a good viewing distance as well as during a proper length of time [4], the potential negative impact of using e-media still can not be neglected. As is issued by the Ministry of Education of the People's Republic of China, the use of computers, mobile phones, and other electronic devices among children should be for no more than 15 min continuously, and 1 h a day. A previous study has investigated that children use electronic devices for 43.24 min a day on school days and 96.27 min on weekends, of which more than 60% are used for entertainment and social interaction except for education [5].

Preschoolers' use of e-media frequently may be a threatening factor for their development both physically and psychologically. Studies illustrated that children who spend a long time on-screen use showed high levels of myopia and amblyopia [6]. High-dose e-media use taking up the time for physical activities can also raise the risk of childhood obesity [6]. Additionally, much research has focused on behavioral addiction leading to problems with family members and the loss of child's interest, and the difficulty in concentration [7]. Apart from the correlation between the use of digital devices and behavioral addiction, previous findings also showed it was associated with preschoolers' development of emotion and relationships [4, 8]. Notwithstanding, it appears that parents may lack awareness of the likely hazards to children and their excessive use of e-media to the psychosocial development of their children. Additionally, they may empirically reckon that using e-media is as normal as eating in the everyday life of children.

While research on children's high-dose media use has grown, little research demonstrates the specific effects of unreasonable use of e-media on preschool children's emotions and social relationships and the further consequences. Therefore, aiming to fill this research gap, the current study investigated the associations between high e-media exposure with emotional development and social relationships of children aged 0–6. This study is divided into 5 sections, beginning with the introduction of this study in which the background and general findings of the relationship between e-media use and children's development were covered. Section 2 discusses the effects of excessive use of electronic products on children's emotional development focusing on the risk of anxiety and depression. Moreover, Sect. 3 is a literature review regarding the association between frequent e-media use and the preschoolers' development of social relationships. Section 4 gives parents some suggestions to interfere with children's excessive screen use and prevent or remedy its consequences. The last section concludes that high use of electronic devices may lead to a high level of emotional problems and harm a child's development of social skills which may raise the risks of peer bully and poor parent-child relations.

2 The Effects of Excessive E-Media Use on Emotional Development

Due to the rapid innovation of e-media and its complex diversity, preschool children with immature physical and psychological conditions may encounter more risks to their emotional development when using electronic devices for a long time every day. Over

e-media use might be related to more elevated levels of emotional development, such as anxiety and depression, according to previous findings that watching more TV resulted in high levels of emotional instability compared to watching less TV [9]. High-dose e-media use can result in later sleep times and insufficient sleep, leading to poor sleep quality, which in turn instigates the form of anxiety and depression [10, 11]. This part is divided into two sections including anxiety and depression, each of which may, to some degree, result from the frequent use of electronic products.

2.1 Anxiety

As mentioned before, high-dose e-media use can affect sleep quality which is also known to contribute to anxiety [8]. Previous research found evidence of the fact that among children who use digital devices usually, 70% of them are faced with a lack of sleep [3], mainly manifesting in delayed bedtime and shorter total sleep time [12]. To put it simply, excessive media use may corner children to the ultimate anxiety and fickleness by lowering sleep quality. Moreover, electronic media can bring strong emotional experiences to children and adolescents with undeveloped self-control. Refusing children with the experience of using e-media to watch mobile devices without mental preparation may provoke a strong sense of deprivation. Therefore, they are prone to over-dependence, resulting in anxiety and isolation.

Additionally, research suggested that preschoolers used to being soothed by electronic media experience more extreme emotions when taken away from electronic devices [10]. A recent study found that from the perspective of some parents, it seems harmless and practical to regard playing with phones or tablets as a distraction when toddlers are fidgeting and crying but interminably it can worsen their bad feelings after taking away e-media and degrade their abilities to control emotions [11]. Besides, when children are exposed to tense or aggressive scenes, they will be too strained, anxious, and afraid. If they encounter similar situations in life, they will tend to escape, which is not conducive to children's development of social emotions.

2.2 Depression

Previous studies obtained consistent findings that the availability of time for traditional face-to-face social interaction was reduced evidently by excessive online communication and the behavior of internet addiction, which might be one of the potential grounds of depression for each online user [13]. In addition to the relationships between the time spent on electronic devices and depression [13], the addicted behavior of e-media use can also be reflected in the long time paid to play with electronic devices. Analyzing a sample of 506,820 U.S. adolescents, the researchers confirmed a relationship between e-media use and depression symptoms and suicide rates. "48% of those spending five hours a day in front of an electronic screen reported at least one suicidal attempt. By contrast, those who used screens for just an hour a day had a rate as low as 29%" [14]. It is worth noting that e-media, on the other hand, the internet might reduce depression symptoms, if it is used legitimately for enhancing communication with family members and friends, except for over-posting.

Concerning children aged 0–6 having little social interaction by using mobile devices, excessive electronic screen watching may be related to their brain's development. As with all of the present findings, preschoolers with more screen time may have less integrity in the white matter of the brain, involved in learning and coordinating communication between the brain's left and right hemispheres [15]. Thus, excessive screen use may even change the physiology of brains [15]. Gradually, children may lose interest in other things since they may think nothing is more interesting than e-media, which may easily give rise to depression. Additionally, human brains have not evolved to cope with the onslaught of visual stimulation and instant gratification. Perhaps that is why adults spending more than six hours a day gazing at an electronic screen are more likely to develop depression.

3 The Effects of Excessive E-Media Use on Interpersonal Relationships

As science and technology have developed rapidly, the emergence of electronic media (TV, mobile phone, computer, etc.) is gradually changing the social interaction environment. Children are too immature to access the “adults' world” brought by electronic media so it is hard for them to distinguish between the real and virtual world, bringing about role confusion and damaging their nature of communication. This situation is more harmful to preschoolers in the critical period of language development by taking up time for communication and contact with people, then causing social and communication problems in building the parent-child relationship and peer relations.

3.1 Peer Relationships

Previous studies have asserted that the increased total screen time might have something to do with peer problems [16]. It seems that children at a younger age with a high level of e-media use might have some peer problems [16]. To start with, excessive e-media use may cut preschoolers' time to contact with their peers with a high-potential devaluation of their friendship [17], though electronic devices can expand children's knowledge and information with diverse topics for them to chat with friends. As well as decreasing the time to build friendships, e-media use can also be related to higher aggression, in line with prior findings that higher-dose mobile devices use may correlate with higher aggression.

Compared with educational content, risky and violent content is more attractive to children and many videos today tend to insert violent behaviors in a large portion of the settings, including not only some striking and kicking actions, but also some killing and raping actions [18]. As Bandura pointed out, humans behave by learning and observation, especially in preschool children, in line with previous findings that there is an association between a large amount of perceived violence on electronic media and children's shown aggressive behaviors [18]. Through observation and imitation with continuously watching aggressive actions from e-media, children may learn to use violent means to solve problems when meeting a conflict with others, thus affecting their peer relationships. Even worse, they may be apathetic about aggressive actions and the

longitudinal negative influence may sustain into the elementary and secondary school which may be the potential reason for the frequency of school bullying.

3.2 Parent-Child Relationships

Except for regarding e-media as a convenient distraction for children to stop crying mentioned above, many parents today also take an electronic device as “electronic babysitters”, as the “Parent-child Companionship” survey investigated. Based on a sample of nearly 60,000 parents and one million students, asked the question “How do you spend time with your children?”, 11% of parents spent time doing their things without accompanying their children in what children were doing. “Electronic babysitters” replacing parents to play with children can severely lessen the communication between parents and the child, detrimental to the development of the parent-child relationship, especially for children under the age of 3 in the crucial period for formal parent-child relationship and character development.

Also, once children begin to play with e-media, there will be a parent-child conflict, following the previous research that children spending more time using the tablet had more conflicts with their parents [19]. Trying to standardize children using electronic devices like cell phones and electronic watches may easily provoke children’s resentment and resistance, intensifying conflicts and leading to the estrangement of the parent-child relationship. When preschoolers fall into a bad parent-child relationship, they may be reluctant to interact with others and even resulting in autism.

4 Suggestions for Parents

As excessive e-media use has such negative effects on preschools’ development of emotions and social relationships, this paper summarizes some suggestions for parents to avoid the above circumstance. If their children have spent so much time on e-media, how parents could do to relieve the negative consequences.

4.1 Setting Content and Time Limitations

As mentioned above, unreasonable use of e-media is divided into excessive use without time limitations and improper content such as violent games with actions of hitting and killing. To start with, it is not advisable to have electronic devices in children’s bedrooms [12], since having e-media in child bedrooms might be the direct reason for degrading sleep quality. Moreover, based on children’s interests and the law of child development, parents should more strictly select appropriate software giving children proper media enlightening education to avoid direct exposure to violent content and other things unsuitable for children [18]. For children who get into the habit of playing on mobile devices frequently, parents need to limit the time spent on electronic devices gradually to prevent children from rebellion and unhealthy development of emotions. Also, reminding children of the correct way to use e-media such as keeping a good posture and a proper distance in the process of using electronic products should also be taken into consideration.

4.2 Being a Good Guider

There are several ways to be a good guider for children in using electronic products. Helping children to establish a scientific view of e-media and setting a good example for children by shortening their use of electronic products can be taken into account with the augmentation of communication with children. It is worth noting that fine companies can be a very effective way to directly decline children's use of e-devices. To put it simply, increasing parent-child time to do something meaningful such as reading, doing some sports, etc., instead of using electronic devices separately or together, even if the latter is better than the former [4]. If noticing children in depressed emotions, parents should encourage children and lead them to have their thinking, not denying them. Furthermore, perceiving children indulging in the tendency of e-media, parents ought to take timely measures to curb as well as encourage children to go out of the room and actively participate in collective activities.

5 Conclusion

E-media is practically universal in the daily life of many Chinese families, meaning that preschoolers and even newborn babies will easily have opportunities to access and watch more TV programs and videos daily, as suggested by some evidence. The current research supports the implication that connections between high-dose e-media use and preschoolers' psychological development. Firstly, regarding emotional development, preschoolers who use e-media excessively may disrupt sleep quantity and quality leading to various levels of anxiety and depression. Furthermore, a bi-directional correlation existed between sleep quality and depression and anxiety. Secondly, high-dose e-media use can reduce self-other social interactions. Besides, the various content of e-media including actions of violence, raping, and killing can be a risky factor impacting children's peer relationships. Therefore, children might learn solving problems in violent ways leading to poor peer relationships. It can also be a source of tension in the family due to negative emotional control and parent-child conflicts caused by electronic products.

It should be noted that this study is based on the summary and analysis of several previous research, but the author's subjectivity is hard to avoid completely. Although there is already influential research on the effect of electronic devices, this paper focusing on preschoolers expands the age of the study subjects in this field. However, longitudinal studies should be conducted to demonstrate the influence trends of high-dose electronic media use and its far-reaching consequences. Another significant limitation of this study is that it can only prove the existence and strength of correlation between frequent use of e-media and preschoolers' emotional and social development which does not prove a causal relationship. Thus, future experiments will be designed to investigate the causality among these variables by taking various other confounding factors into account. These include but are not limited to family socioeconomic status, gender, the educational level of parents, relationship status, the strength of social connections in real life (school), and so on.

Eventually, guidelines about the content of e-media children are exposed to, and the time of use for electronic media ought to be not just offered to preschoolers and youths

of various ages, but spread to the general public. More importantly, parents should be informed that e-media use, especially in a high dose can pose a threat to their children's health both physically and psychologically.

References

1. Li, W. G., & Shen, J. (2010). Annual report on the Internet use by minors in China (2009–2010). *Social Sciences Academic Press* (China).
2. Rideout, V. (2017). The common sense census: media use by kids age zero to eight, San Francisco, CA.
3. Liu, X. M., & Hua, J. (2021). Research advances on the effects of electronic screen exposure on sleep in children. *China Child Health Care*, 29. <https://doi.org/10.11852/zgetbjzz2020-0378>
4. Niiranen, J., Kiviruusu, O., Vornanen, R., et al. (2021). High-dose electronic media use in five-year-olds and its association with their psychosocial symptoms: a cohort study. *BMJ Open*, 11(3). <https://doi.org/10.1136/bmjopen-2020-040848>
5. Wan, L. X. (2019). Annual report on Chinese children's development: Children's out-of-school life condition.
6. Pan, M. R., & Zhang, J. S. (2014). The electronic products use in preschool children. *Journal of Bio-education*, 4, 6. <https://doi.org/10.3969/j.issn.2095-4301.2014.04.007>
7. Domoff, S. E., Harrison, K., Gearhardt, A. N., et al. Development and validation of the Problematic Media Use Measure: a parent report measure of screen media "addiction" in children. *Psychology of Popular Media Culture*, 8, 2–11. <https://doi.org/10.1037/ppm0000163>
8. Wu, X. Y., & Tao, F. B. Further thinking about the double-edged sword effect of digital media use on mental health among children and adolescents. *Chinese Journal of School Health*, 41(11). <https://doi.org/10.16835/j.cnki.1000-9817.2020.11.001>
9. Persegani, C., Russo, P., Carucci, C., & Nicolini, M. (2002). Television viewing and personality structure in children. *Personality and Individual Differences*, 32(6), 977–999. [https://doi.org/10.1016/S0191-8869\(01\)00102-7](https://doi.org/10.1016/S0191-8869(01)00102-7)
10. Alfano, C. A., Zakem, A. H., Costa, N. M., Taylor, L. K., & Weems, C. F. (2009). Sleep problems and their relation to cognitive factors, anxiety, and depressive symptoms in children and adolescents. *Depression & Anxiety*, 26(6). <https://doi.org/10.1002/da.20443>
11. Jackson, M. L., Sztendur, E. M., Diamond, N. T., Byles, J. E., & Bruck, D. (2014). Sleep difficulties and the development of depression and anxiety: a longitudinal study of young Australian women. *Archives of Women's Mental Health*, 17(3), 189–198. <https://doi.org/10.1007/s00737-014-0417-8>
12. Cain, N., & Gradisar, M. (2010). Electronic media use and sleep in school-aged children and adolescents: a review. *Sleep Medicine*, 11(8), 735–742. <https://doi.org/10.1016/j.sleep.2010.02.006>
13. Banjanin, N., Banjanin, N., Dimitrijevic, I., & Pantic, I. (2015). Relationship between internet use and depression: focus on physiological mood oscillations, social networking and online addictive behavior. *Computers in Human Behavior*, 43, 308–312. <https://doi.org/10.1016/j.chb.2014.11.013>
14. Twenge, J. M., Joiner, T. E., Rogers, M. L., & Martin, G. N. (2018). Increases in depressive symptoms, suicide-related outcomes, and suicide rates among US adolescents after 2010 and links to increased new media screen time. *Clinical Psychological Science*, 6(1), 3–17. <https://doi.org/10.1177/2167702617723376>

15. Hutton, J. S., Dudley, J., Horowitz-Kraus, T., DeWitt, T., & Holland, S. K. (2020). Associations between screen-based media use and brain white matter integrity in preschool-aged children. *JAMA Pediatrics*, *174*(1). <https://doi.org/10.1001/jamapediatrics.2019.3869>
16. Christakis, D. A., Zimmerman, F. J., DiGiuseppe, D. L., et al. (2004). Early television exposure and subsequent attentional problems in children. *Pediatrics*, *113*, 708–713. <https://doi.org/10.1542/peds.113.4.708>
17. Mei, J., & Qian, G. Y. (2018). Research on the status quo of children's exposure to smart phones and tablets and its influence on their social development. *Early Education (Teaching and Research Edition)*, *09*.
18. Jusoff, K., & Sahimi, N. N. (2009). Television and media literacy in young children: issues and effects in early childhood. *International Education Studies*, *2*(3), 151–157. <https://doi.org/10.5539/ies.v2n3p151>
19. Matthes, J., Thomas, M. F., Stevic, A., & Schmuck, D. (2021). Fighting over smartphones? Parents' excessive smartphone use, lack of control over children's use, and conflict. *Computers in Human Behavior*, *116*, 106618. <https://doi.org/10.1016/j.chb.2021.106764>

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

