



Media and Young Minds

COUNCIL ON COMMUNICATIONS AND MEDIA

Infants, toddlers, and preschoolers are now growing up in environments saturated with a variety of traditional and new technologies, which they are adopting at increasing rates. Although there has been much hope for the educational potential of interactive media for young children, accompanied by fears about their overuse during this crucial period of rapid brain development, research in this area still remains limited. This policy statement reviews the existing literature on television, videos, and mobile/interactive technologies; their potential for educational benefit; and related health concerns for young children (0 to 5 years of age). The statement also highlights areas in which pediatric providers can offer specific guidance to families in managing their young children's media use, not only in terms of content or time limits, but also emphasizing the importance of parent-child shared media use and allowing the child time to take part in other developmentally healthy activities.

INTRODUCTION

Technologic innovation has transformed media and its role in the lives of infants and young children. More children, even in economically challenged households, are using newer digital technologies, such as interactive and mobile media, on a daily basis¹ and continue to be the target of intense marketing.² This policy statement addresses the influence of media on the health and development of children from 0 to 5 years of age, a time of critical brain development, building secure relationships, and establishing health behaviors.

INFANTS AND TODDLERS

Children younger than 2 years need hands-on exploration and social interaction with trusted caregivers to develop their cognitive, language, motor, and social-emotional skills. Because of their immature symbolic, memory, and attentional skills, infants and toddlers cannot learn from traditional digital media as they do from interactions with caregivers,³ and they have difficulty transferring that knowledge to their 3-dimensional experience.⁴ The chief factor that facilitates toddlers'

abstract

FREE

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learning from commercial media (starting around 15 months of age) is parents watching with them and reteaching the content.^{5,6}

The interactivity of touchscreens enables applications (apps) to identify when a child responds accurately and then tailor its responses, thereby supporting children at their levels of competence. Emerging evidence shows that at 24 months of age, children can learn words from live video-chatting with a responsive adult⁷ or from an interactive touchscreen interface that scaffolds the child to choose the relevant answers.⁸ Starting at 15 months of age, toddlers can learn novel words from touchscreens in laboratory-based studies but have trouble transferring this knowledge to the 3-dimensional world.⁹ However, it should be noted that these experiments used specially designed apps that are not commercially available.

Many parents now use video-chat (eg, Skype, FaceTime) as an interactive media form that facilitates social connection with distant relatives. New evidence shows that infants and toddlers regularly engage in video-chatting,¹⁰ but the same principles regarding need for parental support would apply in order for infants and toddlers to understand what they are seeing.

In summary, for children younger than 2 years, evidence for benefits of media is still limited, adult interaction with the child during media use is crucial, and there continues to be evidence of harm from excessive digital media use, as described later in this statement.

PRESCHOOL MEDIA AND LEARNING

Well-designed television programs, such as Sesame Street, can improve cognitive, literacy, and social outcomes for children 3 to

5 years of age^{11,12} and continue to create programming that addresses evolving child health and developmental needs (eg, obesity prevention, resilience). Evaluations of apps from Sesame Workshop and the Public Broadcasting Service (PBS) also have shown efficacy in teaching literacy skills to preschoolers.² Unfortunately, most apps parents find under the “educational” category in app stores have no such evidence of efficacy, target only rote academic skills, are not based on established curricula, and use little or no input from developmental specialists or educators.^{2,13} Most apps also generally are not designed for a dual audience (ie, both parent and child).^{2,14} It is important to emphasize to parents that the higher-order thinking skills and executive functions essential for school success, such as task persistence, impulse control, emotion regulation, and creative, flexible thinking, are best taught through unstructured and social (not digital) play,¹⁵ as well as responsive parent-child interactions.¹⁶

Digital books (also called “eBooks,” books that can be read on a screen) often come with interactive enhancements that, research suggests, may decrease child comprehension of content or parent dialogic reading interactions when visual effects are distracting.¹⁷ Parents should, therefore, be instructed to interact with children during eBook reading, as they would a print book.

HEALTH AND DEVELOPMENTAL CONCERNS

Obesity

Heavy media use during preschool years is associated with small but significant increases in BMI,¹⁸ may explain disparities in obesity risk in minority children,¹⁹ and sets the stage for weight gain later in childhood.²⁰ Although many

studies have used a 2-hour cutoff to examine obesity risk, a recent study of 2-year-olds found that BMI increased for every hour per week of media consumed.²¹ It is believed that exposure to food advertising²² and watching television while eating (which diminishes attention to satiety cues)²³ drives these associations.

Sleep

Increased duration of media exposure and the presence of a television, computer, or mobile device in the bedroom in early childhood have been associated with fewer minutes of sleep per night.²⁴

Even infants exposed to screen media in the evening hours show significantly shorter night-time sleep duration than those with no evening screen exposure.²⁵ Mechanisms underlying this association include arousing content²⁶ and suppression of endogenous melatonin by blue light emitted from screens.²⁷

Child Development

Population-based studies continue to show associations between excessive television viewing in early childhood and cognitive,²⁸⁻³⁰ language,^{31,32} and social/emotional delays,³³⁻³⁶ likely secondary to decreases in parent-child interaction when the television is on³⁷ and poorer family functioning in households with high media use.³⁷ An earlier age of media use onset, greater cumulative hours of media use, and non-PBS content all are significant independent predictors of poor executive functioning in preschoolers.³⁸ Content is crucial: experimental evidence shows that switching from violent content to educational/prosocial content results in significant improvement in behavioral symptoms, particularly for low-income boys.¹² Notably, the quality of parenting can modify associations between media use and child development: one study found that inappropriate content

and inconsistent parenting had cumulative negative effects on low-income preschoolers' executive function, whereas warm parenting and educational content interacted to produce additive benefits.³⁹

Child characteristics also may influence how much media children consume: excessive television viewing is more likely in infants and toddlers with a difficult temperament^{40,41} or self-regulation problems,⁴² and toddlers with social-emotional delays are more likely to be given a mobile device to calm them down.⁴³

Parental Media Use

Parents' background television use distracts from parent-child interactions⁴⁴ and child play.⁴⁵ Heavy parent use of mobile devices is associated with fewer verbal and nonverbal interactions between parents and children⁴⁶ and may be associated with more parent-child conflict.⁴⁷ Because parent media use is a strong predictor of child media habits,⁴⁸ reducing parental media use and enhancing parent-child interactions may be an important area of behavior change.

CONCLUSIONS: CLINICAL IMPLICATIONS

In summary, multiple developmental and health concerns continue to exist for young children using all forms of digital media to excess. Evidence is sufficient to recommend time limitations on digital media use for children 2 to 5 years to no more than 1 hour per day to allow children ample time to engage in other activities important to their health and development and to establish media viewing habits associated with lower risk of obesity later in life.⁴⁹ In addition, encouraging parents to change to educational and prosocial content and engage with their children around technology

will allow children to reap the most benefit from what they view.

As digital technologies become more ubiquitous, pediatric providers must guide parents not only on the duration and content of media their child uses, but also on (1) creating unplugged spaces and times in their homes, because devices can now be taken anywhere; (2) the ability of new technologies to be used in social and creative ways; and (3) the importance of not displacing sleep, exercise, play, reading aloud, and social interactions. Realistically, pediatric providers will need to know how to help parents find resources finding appropriate content, tools for monitoring or limiting child use, ideas for play or activities in which to engage rather than digital play, and how parents can limit their own media use (see HealthyChildren.org for examples); each of these can be built into the Family Media Use Plan (see the American Academy of Pediatrics guide to developing a plan at www.healthychildren.org/MediaUsePlan).

RECOMMENDATIONS

Pediatricians

- Start the conversation early. Ask parents of infants and young children about family media use, their children's use habits, and media use locations.
- Help families develop a Family Media Use Plan (www.healthychildren.org/MediaUsePlan) with specific guidelines for each child and parent.
- Educate parents about brain development in the early years and the importance of hands-on, unstructured, and social play to build language, cognitive, and social-emotional skills.
- For children younger than 18 months, discourage use of screen media other than video-chatting.

- For parents of children 18 to 24 months of age who want to introduce digital media, advise that they choose high-quality programming/apps and use them together with children, because this is how toddlers learn best. Letting children use media by themselves should be avoided.
- Guide parents to resources for finding quality products (eg, Common Sense Media, PBS Kids, Sesame Workshop).
- In children older than 2 years, limit media to 1 hour or less per day of high-quality programming. Recommend shared use between parent and child to promote enhanced learning, greater interaction, and limit setting.
- Recommend no screens during meals and for 1 hour before bedtime.
- Problem-solve with parents facing challenges, such as setting limits, finding alternate activities, and calming children.

Families

- Avoid digital media use (except video-chatting) in children younger than 18 to 24 months.
- For children ages 18 to 24 months of age, if you want to introduce digital media, choose high-quality programming and use media together with your child. Avoid solo media use in this age group.
- Do not feel pressured to introduce technology early; interfaces are so intuitive that children will figure them out quickly once they start using them at home or in school.
- For children 2 to 5 years of age, limit screen use to 1 hour per day of high-quality programming, covie with your children, help children understand what they are seeing, and help them apply what they learn to the world around them.

- Avoid fast-paced programs (young children do not understand them as well), apps with lots of distracting content, and any violent content.
 - Turn off televisions and other devices when not in use.
 - Avoid using media as the only way to calm your child. Although there are intermittent times (eg, medical procedures, airplane flights) when media is useful as a soothing strategy, there is concern that using media as strategy to calm could lead to problems with limit setting or the inability of children to develop their own emotion regulation. Ask your pediatrician for help if needed.
 - Monitor children’s media content and what apps are used or downloaded. Test apps before the child uses them, play together, and ask the child what he or she thinks about the app.
 - Keep bedrooms, mealtimes, and parent–child playtimes screen free for children and parents. Parents can set a “do not disturb” option on their phones during these times.
 - No screens 1 hour before bedtime, and remove devices from bedrooms before bed.
 - Consult the American Academy of Pediatrics Family Media Use Plan, available at: www.healthychildren.org/MediaUsePlan.
- Formally and scientifically evaluate products before making educational claims.
 - Make high-quality products accessible and affordable to low-income families and in multiple languages.
 - Eliminate advertising and unhealthy messages on apps. Children at this age cannot differentiate between advertisements and factual information, and therefore, advertising to them is unethical.
 - Help parents to set limits by stopping auto-advance of videos as the default setting. Develop systems embedded in devices that can help parents monitor and limit media use.

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ABBREVIATIONS

app: application
PBS: Public Broadcasting Service

REFERENCES

1. Kabali HK, Irigoyen MM, Nunez-Davis R, et al. Exposure and use of mobile devices by young children. *Pediatrics*. 2015;136(6):1044–1050
2. Chiong C, Shuler C; The Joan Ganz Cooney Center at Sesame Workshop. Learning: Is there an app for that? Investigations of young children’s usage of learning with mobile devices and apps. Available at: http://dmlcentral.net/wp-content/uploads/files/learningapps_final_110410.pdf. Accessed September 2, 2016
3. Anderson DR, Pempek TA. Television and very young children. *Am Behav Sci*. 2005;48(5):505–522
4. Barr R. Memory constraints on infant learning from picture books, television, and touchscreens. *Child Dev Perspect*. 2013;7(4):205–210
5. DeLoache JS, Chiong C, Sherman K, et al. Do babies learn from baby media? *Psychol Sci*. 2010;21(11):1570–1574
6. Richert RA, Robb MB, Fender JG, Wartella E. Word learning from baby videos. *Arch Pediatr Adolesc Med*. 2010;164(5):432–437
7. Roseberry S, Hirsh-Pasek K, Golinkoff RM. Skype me! Socially contingent interactions help toddlers learn language. *Child Dev*. 2014;85(3):956–970
8. Kirkorian HL, Choi K, Pempek TA. Toddlers’ Word Learning From Contingent and Noncontingent Video on Touch Screens. *Child Dev*. 2016;87(2):405–413
9. Zack E, Gerhardstein P, Meltzoff AN, Barr R. 15-month-olds’ transfer of learning between touch screen and real-world displays: language cues and cognitive loads. *Scand J Psychol*. 2013;54(1):20–25
10. McClure ER, Chentsova-Dutton YE, Barr RF, Holochwost SJ, Parrott WG. “Facetime doesn’t count”: video-chat as an exception to media restrictions for infants and toddlers. *Int J Child Comput Interact*. 2016;6:1–6
11. Anderson DR, Huston AC, Schmitt KL, Linebarger DL, Wright JC. Early childhood television viewing and adolescent behavior: the recontact

- study. *Monogr Soc Res Child Dev*. 2001;66(1):I–VIII, 1–147
12. Christakis DA, Garrison MM, Herrenkohl T, et al. Modifying media content for preschool children: a randomized controlled trial. *Pediatrics*. 2013;131(3):431–438
 13. Guernsey L, Levine MH. *Tap Click Read: Growing readers in a world of screens*. San Francisco, CA: Jossey-Bass; 2015
 14. Hirsh-Pasek K, Zosh JM, Golinkoff RM, Gray JH, Robb MB, Kaufman J. Putting education in “educational” apps: lessons from the science of learning. *Psychol Sci Public Interest*. 2015;16(1):3–34
 15. Shaheen S. How child’s play impacts executive function–related behaviors. *Appl Neuropsychol Child*. 2014;3(3):182–187
 16. Blair C, Granger DA, Willoughby M, et al; FLP Investigators. Salivary cortisol mediates effects of poverty and parenting on executive functions in early childhood. *Child Dev*. 2011;82(6):1970–1984
 17. Bus AG, Takacs ZK, Kegel CA. Affordances and limitations of electronic storybooks for young children’s emergent literacy. *Dev Rev*. 2015;35:79–97
 18. Cox R, Skouteris H, Rutherford L, Fuller-Tyszkiewicz M, Dell’ Aquila D, Hardy LL. Television viewing, television content, food intake, physical activity and body mass index: a cross-sectional study of preschool children aged 2–6 years. *Health Promot J Austr*. 2012;23(1):58–62
 19. Taveras EM, Gillman MW, Kleinman KP, Rich-Edwards JW, Rifas-Shiman SL. Reducing racial/ethnic disparities in childhood obesity: the role of early life risk factors. *JAMA Pediatr*. 2013;167(8):731–738
 20. Suglia SF, Duarte CS, Chambers EC, Boynton-Jarrett R. Social and behavioral risk factors for obesity in early childhood. *J Dev Behav Pediatr*. 2013;34(8):549–556
 21. Wen LM, Baur LA, Rissel C, Xu H, Simpson JM. Correlates of body mass index and overweight and obesity of children aged 2 years: findings from the healthy beginnings trial. *Obesity (Silver Spring)*. 2014;22(7):1723–1730
 22. Mazarello Paes V, Ong KK, Lakshman R. Factors influencing obesogenic dietary intake in young children (0–6 years): systematic review of qualitative evidence. *BMJ Open*. 2015;5(9):e007396
 23. Bellissimo N, Pencharz PB, Thomas SG, Anderson GH. Effect of television viewing at mealtime on food intake after a glucose preload in boys. *Pediatr Res*. 2007;61(6):745–749
 24. Cespedes EM, Gillman MW, Kleinman K, Rifas-Shiman SL, Redline S, Taveras EM. Television viewing, bedroom television, and sleep duration from infancy to mid-childhood. *Pediatrics*. 2014;133(5). Available at: www.pediatrics.org/cgi/content/full/133/5/e1163
 25. Vijakkhana N, Wilaisakditipakorn T, Ruedeehajorn K, Pruksananonda C, Chonchaiya W. Evening media exposure reduces night-time sleep. *Acta Paediatr*. 2015;104(3):306–312
 26. Garrison MM, Liekweg K, Christakis DA. Media use and child sleep: the impact of content, timing, and environment. *Pediatrics*. 2011;128(1):29–35
 27. Salti R, Tarquini R, Stagi S, et al. Age-dependent association of exposure to television screen with children’s urinary melatonin excretion? *Neuroendocrinol Lett*. 2006;27(1–2):73–80
 28. Tomopoulos S, Dreyer BP, Berkule S, Fierman AH, Brockmeyer C, Mendelsohn AL. Infant media exposure and toddler development. *Arch Pediatr Adolesc Med*. 2010;164(12):1105–1111
 29. Schmidt ME, Rich M, Rifas-Shiman SL, Oken E, Taveras EM. Television viewing in infancy and child cognition at 3 years of age in a US cohort. *Pediatrics*. 2009;123(3). Available at: www.pediatrics.org/cgi/content/full/123/3/e370
 30. Lin LY, Cherng RJ, Chen YJ, Chen YJ, Yang HM. Effects of television exposure on developmental skills among young children. *Infant Behav Dev*. 2015;38:20–26
 31. Zimmerman FJ, Christakis DA, Meltzoff AN. Associations between media viewing and language development in children under age 2 years. *J Pediatr*. 2007;151(4):364–368
 32. Duch H, Fisher EM, Ensari I, et al. Association of screen time use and language development in Hispanic toddlers: a cross-sectional and longitudinal study. *Clin Pediatr (Phila)*. 2013;52(9):857–865
 33. Tomopoulos S, Dreyer BP, Valdez P, et al. Media content and externalizing behaviors in Latino toddlers. *Ambul Pediatr*. 2007;7(3):232–238
 34. Hinkley T, Verbestel V, Ahrens W, et al; IDEFICS Consortium. Early childhood electronic media use as a predictor of poorer well-being: a prospective cohort study. *JAMA Pediatr*. 2014;168(5):485–492
 35. Pagani LS, Fitzpatrick C, Barnett TA, Dubow E. Prospective associations between early childhood television exposure and academic, psychosocial, and physical well-being by middle childhood. *Arch Pediatr Adolesc Med*. 2010;164(5):425–431
 36. Conners-Burrow NA, McKelvey LM, Fussell JJ. Social outcomes associated with media viewing habits of low-income preschool children. *Early Educ Dev*. 2011;22(2):256–273
 37. Christakis DA, Gilkerson J, Richards JA, et al. Audible television and decreased adult words, infant vocalizations, and conversational turns: a population-based study. *Arch Pediatr Adolesc Med*. 2009;163(6):554–558
 38. Nathanson AI, Aladé F, Sharp ML, Rasmussen EE, Christy K. The relation between television exposure and executive function among preschoolers. *Dev Psychol*. 2014;50(5):1497–1506
 39. Linebarger DL, Barr R, Lapierre MA, Piotrowski JT. Associations between parenting, media use, cumulative risk, and children’s executive functioning. *J Dev Behav Pediatr*. 2014;35(6):367–377
 40. Thompson AL, Adair LS, Bentley ME. Maternal characteristics and perception of temperament associated with infant TV exposure. *Pediatrics*. 2013;131(2). Available at: www.pediatrics.org/cgi/content/full/131/2/e390
 41. Sugawara M, Matsumoto S, Murohashi H, Sakai A, Isshiki N. Trajectories of early television contact in Japan: Relationship with preschoolers’ externalizing problems. *J Child Media*. 2015;9(4):453–471

42. Radesky JS, Silverstein M, Zuckerman B, Christakis DA. Infant self-regulation and early childhood media exposure. *Pediatrics*. 2014;133(5). Available at: www.pediatrics.org/cgi/content/full/133/5/e1172
43. Radesky JS, Peacock-Chambers E, Zuckerman B, Silverstein M. Use of mobile technology to calm upset children: associations with social-emotional development. *JAMA Pediatr*. 2016;170(4):397–399
44. Kirkorian HL, Pempek TA, Murphy LA, Schmidt ME, Anderson DR. The impact of background television on parent-child interaction. *Child Dev*. 2009;80(5):1350–1359
45. Schmidt ME, Pempek TA, Kirkorian HL, Lund AF, Anderson DR. The effects of background television on the toy play behavior of very young children. *Child Dev*. 2008;79(4):1137–1151
46. Radesky J, Miller AL, Rosenblum KL, Appugliese D, Kaciroti N, Lumeng JC. Maternal mobile device use during a structured parent-child interaction task. *Acad Pediatr*. 2015;15(2):238–244
47. Radesky JS, Kistin CJ, Zuckerman B, et al. Patterns of mobile device use by caregivers and children during meals in fast food restaurants. *Pediatrics*. 2014;133(4). Available at: www.pediatrics.org/cgi/content/full/133/4/e843
48. Jago R, Stamatakis E, Gama A, et al. Parent and child screen-viewing time and home media environment. *Am J Prev Med*. 2012;43(2):150–158
49. American Academy of Pediatrics, Council on Communications and Media. Media use in school-aged children and adolescents. *Pediatrics*. 2016;138(5):e20162592

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