

Screen Time: Know when it's too early, Know when it's too much

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Obesity and early childhood development experts were shocked and dismayed when President George W. Bush honored the founder of the Baby Einstein¹ video series in his State of the Union address in January 2007. Many scientists see this as the triumph of marketing hype over science² with infants and toddlers as the big losers. Six years earlier the American Academy of Pediatrics recommended that television viewing among children under two years old be “discouraged altogether”³ and more than a half dozen other scientific, child and health advocacy organizations and agencies have made similar recommendations.⁴

But Baby Einstein videos are purported to improve cognitive and language development of infants, so isn't that good? There is evidence that the very opposite may occur. In addition to raising the risk of childhood obesity, some studies suggest that propping an infant in front of these videos is associated with:

- Poorer (or at least no improvement in) social, linguistic and cognitive development
- Decreased imaginative and creative play and reduced social interaction
- Reduced language (new word) acquisition and language development (formation of sentences)
- Reduced parent-child bonding
- Decreased learning and decreased subsequent academic achievement
- Increased habitual screen viewing (including TV viewing) as the child grows older

For children under 2 years, no recreational screen viewing is recommended

The brain of an infant is one of the very first structures to develop *in utero* and brain growth and development continues at a very rapid pace until approximately age 5. There is widespread agreement that this period of rapid growth is critical for the functional development of children's brains because this is when the foundation for learning and subsequent academic achievement and social development is laid.

¹ Baby Einstein and Baby Wordsworth are now owned by the Walt Disney Company

² Gardner A. Watching Special Videos May Not Make Kids Brainier: Real-life interaction is more apt to enhance verbal skills, experts say. HealthDay: News for Healthier Living. March 1, 2010 [accessed March 5, 2010 www.healthday.com/printer.asp?AID=636557]

³ AAP (American Academy of Pediatrics) Children, adolescents, and television. *Pediatrics* 2001; 107(2):423-426

⁴ Institute of Medicine. *Preventing Childhood Obesity: Health in the Balance*. National Academies Press, Washington DC 2005, p. 304. This report cites comparable recommendations made by the American Psychological Association, American Medical Association, American Academy of Pediatrics, National Education Association, Department of Health and Human Services, American Academy of Child and Adolescent Psychiatry, National Parent Teachers Association.

Children are Active Learners

Sometimes described as tiny scientists, toddlers walk around things to see what's on the other side, infants drop things to see what happens (including the effect repeated droppings might have on their caregivers!), they attend to words and sounds, they put things in their mouths to taste them – all in order to learn about their world. But most important of all, they learn through interactions – language as well as emotional exchanges with their caregivers⁵. The widespread practice⁶ of using a video to mesmerize and distract an infant may be convenient for stressed out parents, but it is not optimal for the emotional or cognitive development of the child,⁷ for language acquisition,⁸ or for deepening the parent-child relationship⁹ and a growing number of studies link screen viewing with decreased play,¹⁰ increased body fatness,^{11,12} and a heightened risk of childhood obesity.^{13,14} For children up to two years old, the wisest course of action is to eliminate screen time entirely and that is the current recommendation for the prevention of childhood obesity.¹⁵

For older children: Limit recreational screen viewing to a maximum of 2 hours per day

For children over two, the current recommendation to prevent childhood obesity is to limit recreational screen time to no more than 2 hours per day. The origins of this limit stem from early research documenting a relationship between TV viewing and body fatness.^{16,17} These early studies showed that the more hours of TV viewing, the higher the BMI, although not all studies have shown this

⁵ Lewis T, Amini F, Lannon R. *A General Theory of Love*. Vintage Books. A Division of Random House, New York. 2000.

⁶ Zimmerman FJ, Christakis DA, Meltzoff AN. Television and DVD/video viewing in children younger than 2 years. *Arch Pediatr Adolesc Med*. 2007; 161(5):473-9

⁷ Robb MB, Richert RA, Wartella EA. Just a talking book? Word learning from watching baby videos. *Br J Dev Psychol*. 2009; 27(Pr 1): 27-45.

⁸ Richert RA, Robb MB, Fender JG, Wartella E. Word learning from baby videos. *Arch Pediatr Adolesc Med* 2010; Mar 1; 164(5) [Epub ahead of print; doi: 10.1001/archpediatrics.2010.24]

⁹ Kirkorian HL, Pempek TA, Murphy LA, et al. The impact of background television on parent-child interaction. *Child Development* 2009; 80(5): 1350-1359.

¹⁰ Schmidt ME, Pempek TA, Kirkorian HL, et al. The effects of background television on the toy play behavior of very young children. *Child Development* 2009; 79(4): 1137-1151

¹¹ Robinson TN. Television viewing and childhood obesity. *Pediatr Clin North Am* 48(4): 1017-1025

¹² Jackson DM, Djafarian K, Stewart J, Speakman JR. Increased television viewing is associated with elevated body fatness but not with lower total energy expenditure in children. *Am J Clin Nutr* 2009; 89:1031-1036.

¹³ Institute of Medicine. *Preventing Childhood Obesity: Health in the Balance*. National Academies Press, Washington DC 2005; pp. 301-305.

¹⁴ Mendoza JA, Zimmerman FJ, Christakis DA. Television viewing, computer use, obesity, and adiposity in US preschool children. *International Journal of Behavioral Nutrition and Physical Activity* 2007, 4:44doi:10.1186/1479-5868-4-44 [The electronic version of this article is the complete one and can be found online at: <http://www.ijbnpa.org/content/4/1/44>; accessed March 13, 2010]

¹⁵ Institute of Medicine. *Progress in Preventing Childhood Obesity: How do we Measure Up?* National Academies Press, Washington DC 2007: p. 327.

¹⁶ Robinson TN et al. Does television viewing increase obesity and reduce physical activity? Cross-sectional and longitudinal analyses among adolescent girls. *Pediatrics* 1993; 91(2):273-280

¹⁷ Gortmaker SL et al. Television viewing as a cause of increasing obesity among children in the United States, 1986-1990. *Arch Pediatr Adolesc Med* 1996; 153(4): 356-362

relationship.¹⁸ One study of more than 4000, 8 to 16 year olds¹⁹ used nationally representative NHANES data (considered to be methodologically superior to other studies) and found that obesity prevalence was highest among those children watching 4 or more hours of TV per day and lowest among those watching one hour or less. But evidence was needed that interventions to reduce TV viewing would indeed lead to reduced body fatness or BMI.

This evidence was provided by Tom Robinson²⁰ who designed a school-based intervention to decrease TV viewing and documented improvements in body mass index (BMI). Planet Health, another school-based intervention that included reductions in TV viewing as one component,²¹ found improvements in BMI in some groups of children, but not all. Subsequent research has broadened the 2 hour per day limit to all forms of recreational screen viewing combined.^{22,23}

¹⁸ Sallis JF, Prochaska JJ, Taylor WC. A review of correlates of physical activity of children and adolescents. 2000; *Med Sci Sports Exerc* 32(5):963-975.

¹⁹ Crespo CJ, Smit E, Troiano RP et al. Television watching, energy intake, and obesity in US children: Results from the third National Health and Nutrition Examination Survey, 1988-1994. *Arch Pediatr Adolesc Med* 155(3): 360-365.

²⁰ Robinson TN. Reducing children's television viewing to prevent obesity. A Randomized controlled trial. *JAMA* 1999; 282(16):1561-1567.

²¹ Gortmaker SL, Peterson K, Wiecha J, et al. Reducing obesity via a school-based interdisciplinary intervention among youth: Planet Health. *Arch Pediatr Adolesc Med* 1999; 153(4):409-418

²² Institute of Medicine. *Progress in Preventing Childhood Obesity: How do we Measure Up?* National Academies Press, Washington DC 2007: p. 327.

²³ Institute of Medicine. *Preventing Childhood Obesity: Health in the Balance*. National Academies Press, Washington DC 2005; p. 308.