

Effect of Electronic Media on Children

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Radio, television (TV), movies, video games, cell phones, and computer networks have assumed central roles in our children's daily lives. The media has demonstrated potentially profound effects, both positive and negative, on children's cognitive, social, and behavioral development. Considering the increasing exposure of children to newer forms of media, we decided to review the current literature on the effects of media on child health both in the Western countries and India. It is widely accepted that media has profound influence on child health, including violence, obesity, tobacco and alcohol use, and risky sexual behaviors. Simultaneously, media may have some positive effects on child health. We need to find ways to optimize the role of media in our society, taking advantage of their positive attributes and minimizing their negative ones. We need to understand better how to reverse the negative impact of media and make it more positive.

Key words: *Media, Child, India.*

One of the notable changes in our social environment in the 21st century has been the saturation of our culture and daily lives by the mass media. Unfortunately, the consequences of one particular common element of the electronic mass media have a particularly detrimental effect on children's well being. It is now not just kids in bad neighborhoods or with "bad" friends who are likely to be exposed to bad things when they go out on the street. A "virtual" bad street is easily available to most youth now in their very homes.

MAGNITUDE OF MEDIA EXPOSURE

In the United States (US) over 80% of adolescents own at least one form of new media technology (*e.g.*, cell phone, personal data assistant, computer for Internet access), and they are using this technology with increasing frequency to text and instant message, e-mail, blog, and access social networking websites(1). A national Kaiser Family Foundation (US) survey found that children aged 8 to 18 years had an average media usage time of 6 hours and 21

minutes daily(2). Total media exposure time for most of the children exceeded the time spent in all other activities except sleep.

Although data from India is limited, a significant portion of our children also have considerable TV viewing per day *i.e.* >2 hours/day(3).

EFFECT OF MEDIA ON CHILDREN AND ADOLESCENTS

Effects of the mass media have been found to be far-reaching and potentially harmful in influencing the health-related behaviors of children and adolescents, many of whom are not yet mature enough to distinguish fantasy from reality, particularly when it is presented as "real life." This is particularly important for very young children who developmentally think concretely and are unable to distinguish fantasy from reality. Furthermore, time spent with media decreases the amount of time available for pursuing other more healthy activities such as sports, physical activity, community service, cultural pursuits, and family time.

MEDIA AND BEHAVIORAL PROBLEMS

Children, who observe (in the media or in the environment around them) others exhibiting a specific aggressive behavior, *e.g.* hitting, are more likely to perform the same aggressive behavior immediately.

Exposure to media violence has been positively related to subsequent aggressive behavior, ideas, arousal, and anger. Additionally, there is a significant negative effect of exposure to violence on subsequent helping behavior. Infrequent exposure is not likely to produce lasting consequences, but parents, particularly need to be urged to protect their children against the kinds of repeated exposures that excessive play with violent video games or immersion in violent TV programs is likely to produce(4). Ray, *et al.*(5) from India reported that children having exposure to violence through media had poorer school performance and its impact on their psychosocial adjustments was detrimental. Another study from India showed that vivid display of violence through media (9/11 terrorist attack) caused stress in adolescents(6). Yama, *et al.*(7) described that some of the fears, tensions, bad dreams and tendencies towards delinquencies of children are a result of frequent and a regular exposure to murder-mystery movies, and stories filled with violence and torture that children view on TV and movies. Association between TV viewing and suicidal behavior has also been reported from India(8). Both content exposure and screen time of media had independent detrimental associations with school performance in children and adolescents (9). Hopf, *et al.*(10) showed that the more frequently children view horror and violent films during childhood, and the more frequently they play violent electronic games at the beginning of adolescence, the higher will these students' violence and delinquency be at the age of 14.

Primack, *et al.*(11) showed that excessive TV viewing in adolescence is a risk factor for development of depression in young adulthood. TV viewing may play an exacerbating, if not causal, role in the development of attention-deficit/hyperactivity disorder (ADHD)(12). This hypothesis is consistent with evidence indicating that children with ADHD

watch more television than their peers and experience significant impairments in comprehending stories, a crucial skill in achieving academic success(13). While Zimmerman, *et al.*(14) reported that any deleterious longitudinal relation between television and cognitive outcomes may be more salient among children with ADHD, Acevedo-Polakovich, *et al.*(15) observed no effect. Thus, a more careful examination of the relation between television viewing and children's cognitive abilities are needed.

TELEVISION VIEWING AND SOCIAL ISOLATION

Bickham, *et al.*(16) investigated the relationship between TV viewing time, content, context, and peer integration. As children spend more total time watching TV, they spend a significantly shorter amount of time with friends as compared to those who don't. Thus, viewing television causes poor peer relationships and thereby increases the risk for social isolation, anxiety disorder, agoraphobia, and antisocial behavior, including aggression and gang involvement(7).

Some authors found that the more time children spent watching TV, the less time they spent with their families(17). While TV may isolate children, the reverse causal direction is also plausible – lonely children may turn to TV for entertainment and companionship. Children who are marginalized by their peers use TV to escape the stresses of their lives and meet their social needs(18). Conversely, children who are socially integrated spend less time watching TV(19). Thus, it can be argued that it is social isolation that motivates excessive media use. Overall, it is most likely that both effects occur – children who watch more TV become more socially isolated, which leads them to spend more time watching TV.

While TV viewing is often perceived as an isolating activity, it frequently occurs in the company of friends. Because socializing builds interpersonal skills, TV viewing with friends may provide a venue for these skills to develop(20). It is important to consider content whenever investigating the relationships between media use and behaviors. Violent television viewing may influence younger

children to be more antisocial; resulting in their becoming socially isolated which, in turn, attracts them to more violent media(16). To optimize children's social development and long term mental health, parents, teachers, and pediatricians should discourage the viewing of violent television programs.

MEDIA AND CHILDHOOD OBESITY

Dietz and Gortmaker(21) reported that each additional hour of TV viewing per week increased the risk of obesity by 2%. The experimental study by Robinson found strong evidence of a causal link between TV viewing and children being overweight(22). In India, this association has also been emphasized (23).

Stettler, *et al.*(24) showed a significant association between electronic game use and obesity, with nearly a 2-fold increased risk of obesity for every hour spent playing electronic games daily. An inverse relationship between time spent using video games and daily physical activity has also been observed(25). Thus, if playing of video games is used as a substitute for regular physical activity, the positive association between game play and obesity is certainly plausible; however, if it is used to replace time spent watching television or simply resting, video game play can serve to more positively affect energy expenditure. Thus, although video game play should not be considered a sedentary activity, it should in no way be considered a substitute for regular physical activities that significantly stress the metabolic pathways required for the enhancement of cardiovascular conditioning.

The mechanism of effect of TV exposure on overweight risk is undoubtedly multifactorial. It appears to operate independently from reduced physical activity. Excessive TV exposure may instead operate through the extensive advertising messages for unhealthy foods targeted at very young children or from a tendency of children to snack while watching TV(26). A randomized controlled trial found that increasing screen time resulted in reduced energy expenditure and increased energy intake(27). There is association between exposure to advertisements and children's requests for specific

foods, food purchasing, and food consumption(28). Indeed, studies show that TV viewing is inversely associated with intake of fruits and vegetables, which receive little air time despite their potential to promote health in various ways and protect against weight gain(29).

Epstein, *et al.*(30) conducted a randomized trial and found that reducing television viewing and computer use may have an important role in preventing obesity and in lowering BMI in young children, and these changes may be related more to changes in energy intake than to changes in physical activity.

In the absence of regulations restricting food advertising aimed at children, reduction in television viewing is a promising approach to reducing excess energy intake.

MEDIA AND EATING DISORDERS

The print media promotes an unrealistically thin body ideal that, in turn, is at least partially responsible for promoting eating disorders. One prospective study of thin ideal-promoting media use in young adolescent girls found that decreases in magazine reading over 16 months was associated with decrease in eating disordered symptoms(31). Van den Berg, *et al.*(32) found that frequent reading of magazine articles about dieting/weight loss strongly predicted unhealthy weight control behaviors in adolescent girls, but not boys, 5 years later.

Field, *et al.*(33) observed that the majority of the preadolescent and adolescent girls in their school-based study were unhappy with their body weight and shape. This discontentment was strongly related to the frequency of reading fashion magazines. The frequency of reading fashion magazines was positively associated with the prevalence of having dieted and exercised to lose weight and to improve body shape

The results suggest that the print media aimed at young girls could serve a public health role by refraining from relying on models that are severely underweight and printing more articles on the benefits of physical activity.

MEDIA AND SMOKING

Research has demonstrated a strong association between exposure to certain mass media messages and smoking in adolescents. For instance, more than half of adolescent smoking initiation has been linked to watching smoking in movies(34). Acknowledging the effects of mass media on attitudes and behavior, media literacy may teach youth to understand, analyze, and evaluate advertising and other mass media messages, enabling them to actively process media messages rather than passively remaining targets of mass media(35). India faced a lot of controversy with the ban on on-screen smoking in films and television programs. Initially, ban was imposed from January 1, 2006 and then on January 23, 2009, Delhi High Court lifted the smoking ban in films and TV (36). There is need for evidence based guidelines for such issues.

MEDIA AND ALCOHOL DRINKING

It has been shown that exposure to alcohol advertising and TV programming is associated with positive beliefs about alcohol consumption(37). Although such cross-sectional studies do not prove causation (only association), it is of interest that in a 1990 study, 56% of students in grades 5 to 12 said that alcohol advertising encourages them to drink. Findings showed that girls who had watched more hours of TV at ages 13 and 15 drank more wine and spirits at age 18 than those who had watched fewer hours of TV(38). One study suggested independent associations between marijuana and alcohol use, and media exposure. In particular, music exposure is associated with marijuana use while movie exposure is related to alcohol use(39).

MEDIA AND RISK OF SEXUAL INITIATION

Initiation of sexual intercourse by younger adolescents is associated with risky sexual behaviors and increased risk of multiple partners, unwanted pregnancy, sexually transmitted infections, and pelvic inflammatory disease. In the US, approximately 47% of high school students have had sexual intercourse. Of them, 7.4% report having sex before the age of 13 and 14% have had ≥ 4 sexual partners(40). One potential but largely unexplored factor that may contribute to sexual activity among

adolescents is exposure to sexual content in the mass media. In India, there are reports of messaging of sexual contents through mobiles among school-going adolescents.

Survey research results demonstrate that TV programs watched by adolescents contains high levels of sexual content, include little information about sexual risks, and are an important source of information about sex(41). Almost 75% of 15 to 17-year-olds believe that sexual content on TV influences the behavior of their peers “somewhat” or “a lot.” Collins, *et al.*(42) reported that the amount of sexual content viewed, but not hours of television watched, was a significant one year risk factor for sexual initiation. Ashby, *et al.*(43) used longitudinal data to examine the relationships between amount of television viewing and parental regulation of content on sexual initiation and observed that watching television 2 or more hours per day and lack of parental regulation of television programming were each associated with increased risk of initiating sexual intercourse within a year. Peterson, *et al.*(44) found that co-viewing television and discussing television with parents were related to decreased sexual initiation in certain adolescents.

WHAT CAN BE DONE?

Given the enormous influence that media in all forms exerts on the lives of children, it is astonishing how little parents, researchers, and policymakers have been spurred to action.

First, the media needs to be recognized as a major public health issue rather than as a series of commercial endeavors in need of regulation, as they are among the most profound influences on children. This intersects with many other issues that are critically important to child health, including violence, obesity, tobacco and alcohol use, and risky sexual behaviors. Television and other media must be viewed as more than sources of evil or mere idle pleasures; their potential to enrich the lives of our children are, in fact, enormous, and that potential needs to be explored and actualized. Recently, Moreno, *et al.*(45) reported that a brief e-mail intervention using social networking sites shows promise in reducing sexual references in the online

profiles of at-risk adolescents. There is a need to decide, how to cover a tragedy in a way that will communicate the necessary information and minimize the detrimental effects on the developing brains(46). Thus, we need to find ways to optimize the role of media in our society, taking advantage of their positive attributes and minimizing their negative ones. Media should deliver positive messages e.g. program to address childhood obesity, to encourage parents to talk to their pre-adolescent and adolescent children “early and often” about delaying the onset of sexual activity, anti tobacco message etc. Indian literature also states that with media’s cooperation, it is possible to take important health messages to the community and to screen out images that legitimize practices harmful to child health(47).

Finally, a better evidence base is needed. In India, there are limited studies on effect of media, especially newer media items, on child health and about interventions to improve role of media in child health. Robust, prospective, experimental, population-based effectiveness trials are needed. Better studies of *how* they watch and how viewing habits can be improved are necessary. Such solution-oriented research is the key to advancing public health.

We should focus attention on a strategy that uses media, sometimes in sophisticated ways, to help young people avoid behaviors that reduce their well-being and increase behaviors that promote it. Parents may play a vital role on impact of children’s television viewing(48). Abrol, *et al.*(48) from India showed that a co-viewing adult (parents) can make television viewing an active process and can facilitate learning from it. Anuradha, *et al.*(49) reported significant difference in children’s amount of TV watching depending on the type of negative reinforcement and consequences exercised by the parents. The study also showed that parental disciplinary practices significantly affected children’s academic achievement. So, parents need to be educated about the negative effects of media, but it is not clear how to target messages in such a way that parents will feel that they have the power to make changes within the home. Pediatricians should encourage the development of media literacy, but studies indicate that few primary care physicians

have the time or the inclination to address such matters in office visits because their time is limited and they believe that their efforts in this realm would be futile.

Funding must be made available, and efforts must be undertaken to create targeted campaigns that both raise parental awareness and provide simple strategies for reducing media time and limiting exposure to negative content. These are non-complex, salable actions that can be implemented by most parents or caregivers and reinforced by pediatricians. Because the topography of media exposure has evolved from 10 feet (TV) to 2 feet (computers) to 10 inches (cellular telephones), these actions (with the exception of being a good role model) are important but may only achieve short-term interventions. Technology will continue to present new media opportunities to all children.

The American Academy of Pediatrics (AAP) has recommended guidelines, which has been revised recently, for use of media in children(50): 1) not allowing the bedroom to be a media center with TV, video games, and Internet access; 2) limiting media time to 1 to 2 hours of quality programming; 3) discouraging TV viewing for children younger than 2 years ; 4) viewing and discussing content together; 5) turning off the TV when no one is watching and during meals; and 6) being a good media role model. Pediatricians must become cognizant of the pervasive influence that the wide and expanding variety of entertainment media has on the physical and mental health of children and adolescents. The AAP also makes recommendations to the entertainment industry to avoid violent content. Pediatricians should advocate for a simplified, universal, content-based media-rating system to help parents guide their children to make healthy media choices. Just as it is important that parents know the ingredients in food they may feed to their children, they should be fully informed about the content of the media their children may use.

No such guidelines exist in India. The Indian Academy of Pediatrics should take the lead in formulating and implementing the guidelines to help parents and children to develop healthy media using habits.

CONCLUSIONS

The media has a disturbing potential to negatively affect many aspects of children's healthy development, including weight status, sexual initiation, aggressive feelings and beliefs, consumerism and social isolation. Media also has potential for positive effects on child health. We need to find ways to optimize the role of media in our society, taking advantage of their positive attributes and minimizing their negative ones. The ultimate goal is to reach youth with positive messaging. Embracing media rather than trying to counteract it promises to be an effective tool in shaping the behavior of children and adolescents.

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REFERENCES

1. Lenhart A, Madden M, Hitlin P. Teens and Technology: Youth Are Leading the Transition to a Fully Wired and Mobile Nation [Report on the Internet]. Washington, DC: Pew Internet & American Life; 2007 [cited 2007 Jul 27]. Available from: URL: http://www.pewinternet.org/PPF/r/162/report_display.asp. Accessed November 14, 2009.
2. Kaiser Family Foundation study. Generation M: media in the lives of 8-18 year-olds. Available from: URL: <http://www.kff.org/entmedia/entmedia/030905pkg.cfm>. Accessed November 14, 2009.
3. Arya K. Time spent on television viewing and its effect on changing values of school going children. *Anthropologist* 2004; 6: 269-271.
4. Bushman BJ, Huesmann LR. Short-term and long-term effects of violent media on aggression in children and adults. *Arch Pediatr Adolesc Med* 2006; 160: 348-352.
5. Ray M, Malhi P. Adolescent violence exposure, gender issues and impact. *Indian Pediatr* 2006; 43: 607-612.
6. Ray M, Malhi P. Reactions of Indian adolescents to the 9/11 terrorist attacks. *Indian J Pediatr* 2005; 72: 217-221.
7. Thakur Y, Khokhar C.P. Mass media and children. *Psycho-lingua* 2001; 31: 135-138.
8. Geeta MG, Krishnakumar P. Television and suicidal behavior. *Indian Pediatr* 2005; 42: 837-838.
9. Sharif I, Sargent JD. Association between television, movie and video game exposure and school performance. *Pediatrics* 2006; 118: e1061-e1070.
10. Hopf WH, Huber GL, Weiss RH. Media violence and youth violence. *J Media Psych* 2008; 20: 79-96.
11. Primack BA, Swanier B, Georgiopoulos AM, Land SR, Fine MJ. Adolescent media use and young adult depression: a longitudinal study. *J Adolesc Health* 2008; 42: S5.
12. Christakis DA, Zimmerman FJ, DiGiuseppe DL, McCarthy CA. Early television exposure and subsequent attentional problems in children. *Pediatrics* 2004; 113: 708-713.
13. Acevedo-Polakovich ID, Lorch EP, Milich R. TV or not TV: questions and answers regarding television and ADHD. *ADHD Rep* 2005; 13: 6-11.
14. Zimmerman FJ, Christakis DA. ADHD and television: a reply to Barkley. *ADHD Rep* 2004; 12: 5-6.
15. Acevedo-Polakovich ID, Puzles Lorch EP, Milich R, Ashby RD. Disentangling the relation between television viewing and cognitive processes in children with attention-deficit/hyperactivity disorder and comparison children. *Arch Pediatr Adolesc Med* 2006; 160: 354-360.
16. Bickham DS, Rich M. Is television viewing associated with social isolation? Roles of exposure time, viewing context, and violent content. *Arch Pediatr Adolesc Med* 2006; 160: 387-392.
17. Vandewater EA, Bickham DS, Lee JH. Time well spent? Relating television use to children's free-time activities. *Pediatrics* 2006; 117: 181-191.
18. Kubey RW. Television use in everyday life: coping with unstructured time. *J Commun.* 1986; 36: 108-123.
19. Krosnick JA, Anand SN, Hartl SP. Psychosocial predictors of heavy television viewing among preadolescents and adolescents. *Basic Appl Soc Psych.* 2003; 25: 87-110.
20. Livingstone S, Lemish D. Doing comparative research with children and young people. *In: Livingstone S, Bovill M, eds. Children and Their*

- Changing Media Environment. Hillsdale, NJ: Lawrence Erlbaum Associates; 2001: 31-50.
21. Dietz WH Jr, Gortmaker SL. Do we fatten our children at the television set? Obesity and television viewing in children and adolescents. *Pediatrics* 1985; 75: 807-812.
 22. Robinson TN. Television viewing and childhood obesity. *Pediatr Clin North Am* 2001; 48: 1017-1025.
 23. Kuriyan R, Bhat S, Thomas T, Vaz M, Kurpad AV. Television viewing and sleep are associated with overweight among urban and semi-urban South Indian children. *Nutr J* 2007; 6: 25-28.
 24. Stettler N, Signer TM, Suter PM. Electronic games and environmental factors associated with childhood obesity in Switzerland. *Obes Res* 2004; 12: 896-903.
 25. Janz KF, Mahoney LT. Maturation, gender, and video game playing are related to physical activity intensity in adolescents: the Muscation Study. *Pediatr Exerc Sci* 1997; 9: 353-363.
 26. Lewis MK, Hill AJ. Food advertising on British children's television: a content analysis and experimental study with nine-year olds. *Int J Obes Relat Metab Disord* 1998; 22: 206-214.
 27. Epstein LH, Paluch RA, Consalvi A, Riordan K, Scholl T. Effects of manipulating sedentary behavior on physical activity and food intake. *J Pediatr* 2002; 140: 334-339.
 28. Wiecha JL, Peterson KE, Ludwig DS, Kim J, Sobol A, Gortmaker SL. When children eat what they watch: impact of television viewing on dietary intake in youth. *Arch Pediatr Adolesc Med* 2006; 160: 436-442.
 29. Boynton-Jarrett R, Thomas TN, Peterson KE, Wiecha J, Sobol AM, Gortmaker SL. Impact of television viewing patterns on fruit and vegetable consumption among adolescents. *Pediatrics* 2003; 112: 1321-1326.
 30. Epstein LH, Roemmich JN, Robinson JL, Paluch RA, Winiewicz DD, Fuerch JH, *et al.* A randomized trial of the effects of reducing television viewing and computer use on body mass index in young children. *Arch Pediatr Adolesc Med*. 2008; 162: 239-245.
 31. Vaughan KK, Fouts GT. Changes in television and magazine exposure and eating disorder symptomatology. *Sex Roles* 2003; 49: 313-320.
 32. Van den Berg P, Neumark-Sztainer D, Hannan PJ, Haines J. Is dieting advice from magazines helpful or harmful? Five-year associations with weight-control behaviors and psychological outcomes in adolescents. *Pediatrics* 2007; 119: e30-e37.
 33. Field AE, Cheung L, Wolf AM, Herzog DB, Gortmaker SL, Colditz GA. Exposure to the mass media and weight concerns among girls. *Pediatrics* 1999; 103: e36.
 34. Sargent JD, Beach ML, Adachi-Mejia AM, Gibson JJ, Titus-Ernstoff LT, Carusi CP, *et al.* Exposure to movie smoking: its relation to smoking initiation among US adolescents. *Pediatrics* 2005; 116: 1183-1191.
 35. American Academy of Pediatrics: Committee on Public Education. Media education. *Pediatrics* 1999; 104: 341-343.
 36. Times Now. Delhi High Court lifts smoking ban in films, TV. Available from: URL: <http://news.bollysite.com/bollywood/hc-lifts-ban-on-smoking-in-films.html>. Accessed November 14, 2009.
 37. Grube JW, Waiters E. Alcohol in the media: content and effects on drinking beliefs and behaviors among youth. *Adolesc Med Clin* 2005; 16: 327-343.
 38. Connolly GM, Casswell S, Zhang JF, Silva PA. Alcohol in the mass media and drinking by adolescents: a longitudinal study. *Addiction* 1994; 89: 1255-1263.
 39. Primack BA, Kraemer KL, Fine MJ, MD, Dalton MA. Association between media exposure and marijuana and alcohol use in adolescents. *J Adolesc Health* 2008; 42: S3.
 40. Grunbaum JA, Kann L, Kinchen S, Ross J, Hawkins J, Lowry R, *et al.* Youth risk behavior surveillance—United States, 2003. *MMWR Surveill Summ* 2004; 53: 1-96.
 41. Kunkel D, Eyal K, Finnerty K, Biely E, Donnerstein E. Sex on TV4: A Biennial Report to the Kaiser Family Foundation. Santa Barbara, Calif: Henry J. Kaiser Family Foundation; 2005. Available from: URL: <http://www.kff.org/entmedia/upload/Sex-on-TV-4-Full-Report.pdf>. Accessed November 14, 2009.
 42. Collins RL, Elliott MN, Berry SH, Kanouse DE, Kunkel D, Hunter SB, *et al.* Watching sex on television predicts adolescent initiation of sexual behavior. *Pediatrics* 2004; 114: e280-e289.

43. Ashby SL, Arcari, Edmonson MB. Television viewing and risk of sexual initiation by young adolescents. *Arch Pediatr Adolesc Med* 2006; 160: 375-380.
 44. Peterson JL, Moore KA, Furstenberg FF Jr. Television viewing and early initiation of sexual intercourse: is there a link? *J Homosex* 1991; 21: 93-118.
 45. Moreno MA, VanderStoep A, Parks MR, Zimmerman FJ, Kurth A, Christakis DA. Reducing at-risk adolescents' display of risk behavior on a social networking web site. *Arch Pediatr Adolesc Med* 2009; 163; 35-41.
 46. Joshi PT, Parr AF, Efron LA. TV coverage of tragedies: what is the impact on children? *Indian Pediatr* 2008; 45: 629-634.
 47. Holla RG, Gupta A. Media responsibility and child health. *Indian Pediatr* 2007; 44: 708-08.
 48. Abrol U, Khan N, Shrivastva P. Role of parents in children's television viewing. *Childhood* 1993; 1: 212-219.
 49. Anuradha K, Bharathi VV. TV viewing and children's academic achievement with reference to punishment patterns exercised by the parents. *Psycho-lingua* 2001; 31: 9-13.
 50. American Academy of Pediatrics: Council on Communications and Media. Policy Statement-Media Violence. *Pediatrics* 2009; 124; 1495-1503.
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