

Original article

# Effect of Visual Media Use on School Performance: A Prospective Study

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## Abstract

**Purpose:** To identify mechanisms for the impact of visual media use on adolescents' school performance.

**Methods:** We conducted a 24-month, four-wave longitudinal telephone study of a national sample of 6,486 youth aged 10 to 14 years. Exposure measures: latent construct for screen exposure time (weekday time spent viewing television/playing videogames, presence of television in bedroom) and variables for movie content (proportion of PG-13 and R movies viewed). Outcome measure: self- and parent reports of grades in school. Effects of media exposures on change in school performance between baseline and 24 months were assessed using structural equation modeling. Information about hypothesized mediators (substance use, sensation seeking, and school problem behavior) was obtained at baseline and at the 16-month follow-up.

**Results:** Adjusted for baseline school performance, baseline levels of mediators, and a range of covariates, both screen exposure time and media content had adverse effects on change in school performance. Screen exposure had an indirect effect on poor school performance through increased sensation seeking. Viewing more PG-13 and R-rated movies had indirect effects on poor school performance mediated through increases in substance use and sensation seeking. R-rated viewing also had an indirect effect on poor school performance through increased school behavior problems. The effect sizes of exposure time and content on the intermediate variables and ultimately on school performance were similar to those for previously recognized determinants of these mediators, including household income, parenting style, and adolescents' self-control.

**Conclusions:** These aspects of visual media use adversely affect school performance by increasing sensation seeking, substance use, and school problem behavior. © 2010 Society for Adolescent Medicine. All rights reserved.

**Keywords:** Visual media; Sensation-seeking; School performance; Mediation; Screen time; Screen exposure; Media content

To the extent that school performance predicts educational attainment, it has the potential to affect a host of economic and health outcomes. The relation between television and movie viewing and school performance has been a subject of debate. Studies on preteens and adolescents have suggested a detrimental effect of television viewing on school performance [1–3] relating it to lower homework completion, more learning problems, and worse academic achievement. However, little is

known about what exactly it is about viewing television that affects school performance. For example, is it simply that time spent watching television displaces time doing homework, or does media use influence behavioral characteristics that are ultimately related to school performance? In a cross-sectional study, we found that hours of weekday television viewing and viewing of R-rated movie content were associated concurrently with poor school performance [3]. These observed effects for media exposure could involve intermediate processes and need to be tested in prospective research designs. In this article we report results from a longitudinal analysis that tested several hypothesized pathways linking media variables to change in school performance.

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### Theoretical Model

We have developed a heuristic model, based on social–cognitive theory, that suggests several pathways through which visual media exposure can affect school performance (Figure 1). First, time spent on media use could simply displace time spent doing other activities that promote academic performance, such as doing homework or reading books. Second, viewing certain types of adult content could affect school performance by increasing adolescents' involvement in risky behaviors, such as smoking and alcohol use, resulting in decreased motivation at school. Indeed, exposure to such cues in television or movies increases involvement by adolescents in cigarette smoking [4–11], alcohol use [12–16], and sex [17–19]. Third, there are certain dispositions that predict poor school performance, particularly a preference for intense and exciting sensations, which has been termed sensation seeking [20–25]. Frequent viewing of movies that contain high levels of excitement and arousal (e.g., “action” movies) could increase the desire for these kinds of experiences, which is behaviorally incompatible with concentrated effort on reading and writing. There is also evidence to suggest that exposure to media violence promotes aggressive and uncontrolled behaviors [26–30]. When such behaviors occur in school (e.g., fighting with other students and arguing with teachers) they would be detrimental to the classroom environment and the student's relationship with teachers and other school personnel [31]. Although we could not test all possible pathways shown in Figure 1, in the present research we explored three indirect pathways between visual media exposure and school performance, and also tested for possible direct effects of media variables on school performance. We used a prospective

analysis with structural equation modeling, including baseline measures of each of the three intermediate variables (substance use, school problem behavior, and sensation seeking). Hence, we could test the effect of television and movie viewing on changes over time in these hypothesized intermediate variables, and subsequent effects of the intermediate variables on change in school performance. The model included baseline covariates, variables likely to be correlated with both media exposure and school performance, so as to address potential alternative explanations for the observed effects of media exposure on school performance.

### Methods

#### Design/setting/participants

A national sample of U.S. youth aged 10 to 14 years was recruited between June and October 2003 through a random digit dial telephone survey. Details on the recruitment methods have been published previously [7,9]. Trained interviewers administered the survey. To ensure privacy, a Westat (Rockville, MD) computer-assisted telephone interview system was used so that adolescents could respond to sensitive questions by pressing numbers on the telephone keypad rather than speaking them out loud. Of 9,849 eligible households, parents in 7,492 (77%) families consented, and in these families, 6,522 (87%) adolescents assented to participation. After the baseline interview (Time 1), participants were interviewed again with follow-ups at 8 months (Time 2), 16 months (Time 3), and 24 months after baseline (Time 4). The study was approved by the institutional review boards of Dartmouth Medical School and Westat, and a Certificate of

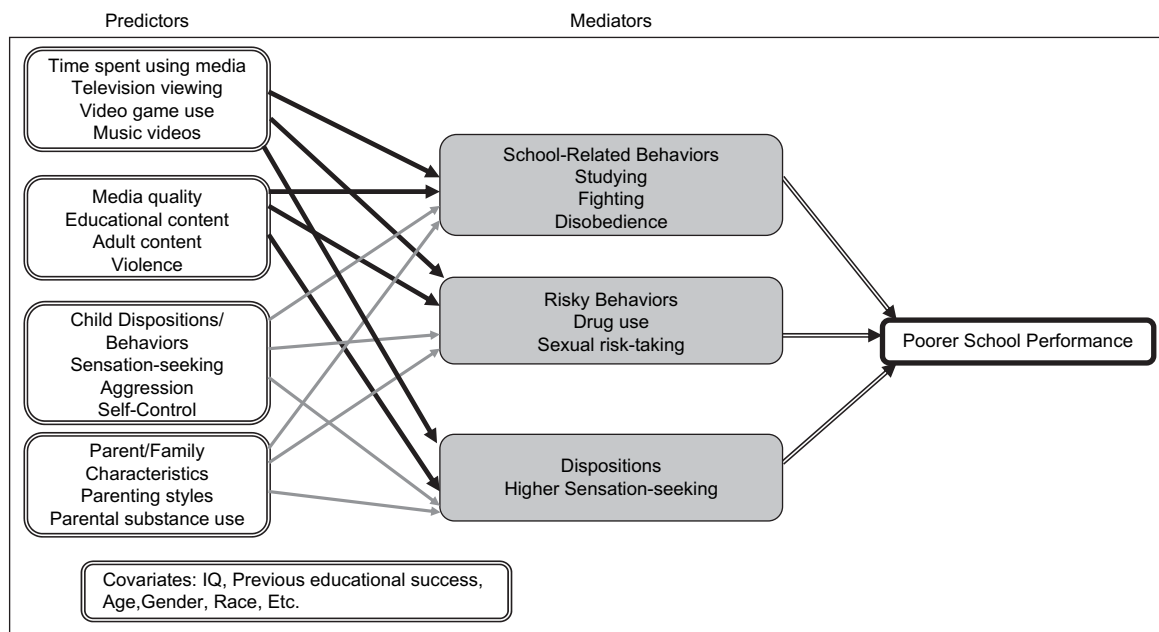


Figure 1. Theoretical relationships between media use, intermediate variables, and school performance.

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