

The Relationship between Screen Time and Sexual Behaviors among Middle School Students

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Abstract

Reducing risky sexual behaviors and their negative health outcomes in youth remains a priority for health educators. Years of research have documented media's effect on various adolescent health risks, including sexual behaviors. As technology evolves and youth access to media increases, understanding the role of media in adolescent health risk behaviors is critical. The purpose of this study is to examine the relationship between middle school student sexual behaviors and screen time. Data from the Youth Risk Behavior Survey for Middle School in three large, southern school districts were used. Chi-square analyses showed that high screen time (3+ hours per school day of television or recreational computer use) was associated with a number of sexual behaviors including ever having had sex, having sex before age 11, and having had three or more partners. Results of multivariable logistic regression models documented the odds of ever

having sex was 31% higher among those with high TV usage, 43% higher among those with high recreational computer usage, and 54% higher among those with extremely high (6+ hours) total screen time. Implications for health educators are presented.

Introduction

It is well documented that youth engage in a variety of risky sexual behaviors. In a recent review of YRBS middle school data from 16 locations across the US, 22.8-32% of middle school students reported ever having sex in almost half of all locations (7/16), (Moore, Barr, & Johnson, 2013). Such behaviors pose significant health risks such as unplanned pregnancy, STDs, HIV, and possible emotional distress (Kirby, Coyle, Alton, Roller, & Robin, 2011). Risk and protective factors, such as age, parental monitoring, and economic opportunities, have been explored to better understand and reduce risky sexual behaviors of youth. Additional psychosocial factors affecting sexual behaviors include knowledge, perception of risk, perception of norms, and attitudes; all of which may be influenced by the media (Kirby, et al., 2011).

Children and adolescents spend a great deal of time using a variety of media each day. With the majority of youth having access to a cell phone, a computer, the internet, and a bedroom television, they spend an average of over seven hours daily consuming media (Rideout, Foehr, & Roberts, 2010). "Over the past five years, young people have increased the amount of time they spend consuming media by an hour and seventeen minutes daily, from 6:21 to 7:38," (Rideout et al., 2010, p. 2). Television watching remains the predominant media medium across all ages, and over four hours per day is spent watching television content alone (Rideout et al., 2010). Despite the recommendation from the American Academy of Pediatrics to remove TVs from children's bedrooms, 68% of 8 to 18 year-olds have a TV in their bedroom (Barr-Anderson, van den Berg, Neumark-Sztainer, & Story, 2008). These youth on average watch almost 1.5 hours more television per day that youth without a bedroom TV (Barr-Anderson et al., 2008).

Media has evolved and changed over time. Traditional media has typically included television, movies, magazines, and/or radio. New media, commonly referred to as digital media, includes the Internet and social networking sites, text messaging, smart cell phones, chat rooms and blogs, and MP3 players or iPods (Brown, Keller, & Stern, 2009; Strasburger, Wilson, & Jordan, 2009). According to the *Pew Internet and American Life Project*, 78% of teens ages 12-17 have a cell phone (up from 45% in 2004), and 47% of those are smartphones (Madden, Lenhart, Duggan, Cortesi, &

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Gasser, 2013). Of all teens in this same study, 37% owned a smartphone in 2012, compared to 23% in 2011. This is a 14% increase in one year. Additionally, 23% of teens have their own tablet computer, 93% have a computer or access to a computer at home, and more teens than adults (25% vs. 15%) are “cell-mostly” internet users (Madden et al., 2013). As media evolves and continues to become more mainstream, new concerns of potential negative effects on teens are emerging. In a national survey of teens 13 to 19 years old, 39% had sent a sexually suggestive message either by text or email, while 48% had received them (National Campaign, 2013).

As media use continues to increase, research continues to explore potential health consequences. Although not the leading cause of any specific health problem, media can impact the nation’s leading adolescent health issues including substance use, eating disorders, risky sexual behavior and aggressive behavior (Strasburger et al., 2009). Observational learning, a construct in Bandura’s Social Cognitive theory, suggests people learn behaviors by observing others perform them in addition to reinforcements they receive for the behaviors (Bandura, 1986). Thus, media exposure to peers or roles models engaging in a variety of negative behaviors (alcohol, sex, drug, violence) may influence behavior of adolescents. This is concerning as the strong influence of peers on youths’ sexual behaviors has also been documented (Ali & Dwyer, 2011). Social media such as Facebook, Instagram and Twitter are likely to enhance such peer norms and have been shown to influence sexual behaviors as well (Black, Schiege & Bull, 2013; Baumgartner, Valkenburg, & Peter, 2006).

The relationship between youth viewing sexual media content and engaging in sexual behaviors has been explored. Television shows aimed at teenagers have been found to include more sexual content than those which are adult oriented, yet include little mention of responsibility or contraception (Kunkel, Eyal, Finnerty, Biely, & Donnerstein, 2005). Numerous studies have found that exposure to sexy media content increases the likelihood of sexual activity and, importantly, hastens the initiation of sexual intercourse (O’Hara, Gibbons, Li, Gerrard, & Sargent, 2013; Brown et al., 2009; Chandra et al., 2008; Brown et al., 2006). Additionally, greater risk for sexually transmitted disease and unplanned pregnancy have also been linked to heavy exposure of sexual content in media (Chandra et al., 2008). The above studies have researched traditional media rather than digital media alone. One recent study documented a correlation between social media use and higher frequency of ever having had sex among Latino 9th and 10th graders (Landry, Gonzales, Wood, & Vyas, 2013). Another recent study of 10 to 16 year old Canadian youth explored the health effects of general screen time (television, video games, computer) regardless of content (Carson, Pickett, & Janssen, 2011). General screen time was associated with an increased risk of engagement in a variety of multiple risk behaviors (MRB), including smoking, drunkenness, non-use of seat belts, cannabis use, illicit drug use and non-use of condoms. More specifically, of the three “screens” studied (TV, video game, computer), high computer use was associated with the highest increase in risk (Carson et al., 2011).

The purpose of this study was to examine the relationship between middle school student sexual behaviors and screen

time. The sexual behaviors include ever having sex, having sex before age 11, having had three or more partners, and condom use at last sexual intercourse. Screen time included three or more hours per school day of television or recreational computer/game use. This study is unique in that it examines screen time in general, rather than sexual versus nonsexual media content, and is focused on middle school students specifically.

Methods

Procedures and participants

The 2009 Youth Risk Behavior Survey for Middle School (YRBS-MS) instrument consisted of approximately 50 questions asked to 7th and 8th graders in three large school districts in the south. Demographic questions included age, grade, gender, and race/ethnicity. The instrument also included questions on safety, tobacco use, alcohol use, illicit drug use, suicide/self-harm, sexual behavior, self-perception of weight, physical activity, computer/television use, and HIV/AIDS education in school. YRBS-MS data used for this study were collected following CDC protocol in the spring of 2009. The YRBS-MS is a self-administered, anonymous survey that employs a two-stage cluster probability sample design. During the first stage, a random sample of public middle schools was selected. The second stage consisted of randomly selecting classrooms within selected schools.

Screen time variables were constructed using media-related questions. Students were asked: 1) on an average school day how many hours they watched television and 2) how many hours they used a computer for something other than schoolwork or played video games. Students were identified as those who reported high television usage (watched television for three or more hours on an average school day), high recreational computer usage (used a computer for non-school activities or played video games for three or more hours on an average school day), high total screen time (those who had three or more hours combined computer/video game and television use on an average school day), and extremely high total screen time (who had six or more hours of total screen time on an average school day).

Students were asked a number of questions concerning sexual activity/history: 1) Have you ever had sexual intercourse? 2) How old were you when you had sexual intercourse for the first time? 3) With how many people have you ever had sexual intercourse? 4) The last time you had sexual intercourse, did you or your partner use a condom? The responses to these questions were used to identify those who 1) had ever had sex, 2) had their first sexual experience before the age of 11 years, 3) had sex with three or more partners, and 4) used a condom the last time they had sex.

Data analysis

Each of the three school districts achieved response rates greater than 60%; therefore, the survey responses were weighted to account for non-response and to be representative of all public middle school students within the surveyed districts. The weighted data were managed using SAS version

9.2 software (SAS Institute, Cary, NC) and analyzed using SUDAAN version 11.0 (Research Triangle Institute, Research Triangle Park, NC). Frequencies and descriptive statistics were generated. Chi-square analyses were conducted to identify significant associations between screen time categories and sexual behaviors. Multivariable logistic regression models were fitted to assess the magnitude and direction of the associations between screen time categories and sexual behaviors controlling for demographic variables.

Given this study was a secondary data analysis, informed consent was not needed.

Results

While the majority of middle school youth are not yet sexually active, a substantial group is. Table 1 shows the demographic characteristics of the 7th and 8th grade students in the three districts that collected data along with the proportion of students engaging in each of the behaviors included in this study. Nearly 23% of these middle school students reported ever having sex, 6.1% reported having had sex before 11 years of age, 8.2% reported having had sex with three or more partners, and, among those who reported ever having sex, over two-thirds reported using a condom the last time they had sex.

Table 1.

Percentage of 7th and 8th Grade Students in Each of the Demographic and Risk Categories Examined, 2009 FL YRBS-MS overall n=5,537

Category	n	%	95% CI
Female	2840	49.3	46.9-51.7
Male	2681	50.7	48.3-53.1
7th	2566	50.0	42.1-57.9
8th	2971	50.0	42.1-59.7
White	1611	24.0	21.1-27.1
Black	1575	29.0	24.8-33.7
Hispanic	1900	44.3	39.3-49.3
Sexual Behaviors			
Ever had sex	4979	22.6	20.3-25.0
Had sex before 11 years of age	4982	6.10	5.2-7.20
Had 3+ sexual partners	3065	8.20	6.8-9.80
Used a condom last time had sex (among those who ever had sex)	1175	68.3	64.7-71.6
Screen Time			
3+ hours TV (high TV usage)	5417	48.0	45.5-50.5
3+ hours recreational computer (high computer usage)	5369	34.5	32.3-36.7
3+ hours total screen time (high TV and/or recreational computer)	5338	72.1	69.8-74.3
6+ hours total screen time (Extremely high TV and/or computer)	5338	32.5	30.3-34.8

Notes. Category n's may differ from the overall n due to occasional missing data

Nearly three-fourths of students reported high total screen time on an average school day. Nearly half watched three or more hours of television and over one-third reported high recreational computer usage on an average school day. More than 3 in 10 students reported extremely high total screen time on an average school day.

Chi-square analysis showed that high screen time was associated with a number of sexual behaviors. Table 2 shows that all screen time variables were associated with ever having sex. Among students reporting high television usage, about 25% ever had sex compared to about 20% among those reporting less than three hours of TV time on an average school day ($p < 0.01$). Similar percentages of ever having sex were observed among those reporting high computer usage,

high total screen time and extremely high total screen time compared to their counterparts.

Among those with extremely high screen time, 7.4% reported having had sex before age 11, compared to 5.0% among their counterparts ($p < 0.05$). Those reporting high computer usage and extremely high total screen time had prevalence rates of having had three or more sexual partners that were about twice as high as students with lower computer and total screen time (12% versus 6%, both with $p < 0.01$).

Multivariable logistic regression showed that many of these relationships remained statistically significant after adjusting for gender, grade, and race/ethnicity, see table 3. Compared to their counterparts, the odds of ever having sex was 31% higher among those with high television usage, 43%

Table 2.

Percentage of Students Engaging in Each of the Sexual Behaviors Stratified by Screen Time Category, 2009 FL YRBS-MS

		Ever had sex	Had sex before 11 years of age	Had 3+ sexual partners	Used a condom last time had sex
		% (SE)	% (SE)	% (SE)	% (SE)
3+ hours TV					
	Yes	25.1 (1.6)**	6.5 (0.7)	9.0 (1.1)	69.3 (2.6)
	No	19.9 (1.3)	5.5 (0.6)	7.3 (0.9)	67.4 (2.5)
3+ hours recreational computer					
	Yes	27.2 (1.7)**	7.0 (0.5)	11.8 (1.6)†	69.3 (3.2)
	No	19.7 (1.3)	5.2 (0.5)	5.9 (0.8)	67.0 (2.5)
3+ hours total screen time					
	Yes	23.4 (1.3)*	5.9 (0.6)	8.6 (0.9)	69.6 (2.1)
	No	19.2 (1.8)	5.6 (0.8)	6.4 (1.3)	63.2 (3.7)
6+ hours total screen time					
	Yes	27.8 (1.9)**	7.4 (1.1)*	12.0 (1.7)**	67.6 (3.4)
	No	19.6 (1.3)	5.0 (0.5)	6.0 (0.8)	68.4 (2.3)

* $p < 0.05$. ** $p < 0.01$.

† = 3 or more partners

higher among those with high recreational computer usage, and 54% higher among those with extremely high total screen time. Among those reporting high recreational computer usage, the odds of having had three or more sexual partners were 95% higher than among those with lower usage. The odds of having three or more sexual partners among those reporting extremely high total screen time were more than twice as high as their counterparts.

Discussion

This study is unique in that it is the only study the authors are aware of that 1) analyzed the impact of general screen time on sexual behaviors rather than sexual versus non-sexual media content, and 2) included computer use/video games, rather than just traditional media such as television, movies, magazines and music in the measure of screen time. It is noteworthy that general screen time, regardless of sexual content, was related to significantly greater likelihood to have ever engaged in sexual intercourse or have three or more partners. Carson et al. (2011) similarly found that general screen time (television, computer and video games) was related to a combined measure of multiple risk behavior which included six variables assessing substance use, and non-use of seat belts and condoms. Most other studies have focused on traditional media and/or sexualized media and their relationship to adolescent sexual behaviors. A few studies that examined

the association between time spent viewing only television in general (not specifically sexual) and sexual behavior did not find a relationship (Collins, 2005; Ward, 2003).

Interestingly, in the current study, ever having had sex was significantly greater among those with three plus hours of television or computer, and those with six plus of screen time. However, having three or more partners was only significantly greater among those having three plus hours of computer use (not television) or six plus hours of screen time. The positive association between general screen time and sexual behaviors may be in part due to the widespread prevalence of sexual images and content in media as discussed in the introduction. Bogt, Engels, Bogers, & Kloosterman (2010) commented that “the most important (U.S.) youth media – TV, music, music video, internet- are saturated with sounds and images of a sexually explicit nature” (pg. 846).

The questions assessing screen time in this study asked about 1) television, and 2) non-school related computer use and video games. It is not known if young people interpreted the second question to include handheld devices (e.g., smart phones, tablets) which they often use to access the internet, video games, social media or even sexually explicit materials; this could influence how screen time is calculated. Regardless, results from this study add a unique aspect to the literature on media’s influence on sexual behavior as the vast majority of previous research has examined traditional media use rather than computer usage which includes internet and social media.

Table 3.

Adjusted Odds Ratios Examining the Relationship Between Screen Time Variables and Sexual Behaviors, 2009 FL YRBS-MS

Independent [referent]	Ever had sex	Had sex before 11 years of age	Had 3+ sexual partners	Used a condom last time had sex
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
3+ hours TV [<3 hours TV]	1.31* (1.09-1.57)	1.13 (0.84-1.52)	1.22 (0.84-1.75)	1.11 (0.77-1.59)
3+ hours recreational computer [< 3 hours recreational computer]	1.43* (1.18-1.75)	1.28 (0.88-1.88)	1.95* (1.29-2.94)	1.08 (0.73-1.61)
3+ hours total screen time [< 3 hours total screen time]	1.22 (0.97-1.53)	1.00 (0.68-1.46)	1.31 (0.80-2.12)	1.36 (0.92-2.00)
6+ hours total screen time [< 6 hours total screen time]	1.54* (1.24-1.90)	1.49 (0.97-2.11)	2.05* (1.35-3.10)	0.97 (0.66-1.42)

Notes. Adjusted for gender, grade, and race/ethnicity

OR = odds ratio. CI = confidence interval.

*p<0.01.

Adolescents' time using the Internet continues to increase (Brown et al., 2009). Although there have been only a few studies assessing the sexual content of social media sites such as MySpace (which has since been replaced by more current social media venues), there are even fewer assessing the effects of digital media on sexual behaviors (Landry et al., 2013). Recent research has found that higher use of texting and social media (not just sexual) were associated with ever having had sexual intercourse (Landry et al., 2013). Other recent studies have shown that peer online sexual activities and peer approval for this behavior predicted risky online sexual behavior (Baumgartner et al., 2006) and that those who sexted were more likely to have had vaginal and oral sex (Dake, Price, Maziarz, & Ward, 2012).

An important aspect of research on social media and adolescent sexual risk behaviors is the role of peer norms. Bleakley, Hennessy, Fishbein, and Jordan (2011) used the Integrative Model of Behavioral Prediction to explore how traditional sexual media affects adolescent sexuality. They found that sexual media content affects normative pressure beliefs, but had little impact on attitudes and self-efficacy related to sexual behaviors. More specifically, they concluded that exposure to sexual media increases adolescent perceptions that their peers are having sex, which in turn affects their sexual behavior, although only slightly. However, Brown and colleagues (2006) found that one of the strongest predictors for early sexual intercourse was the perception that their peers were having sex which may be influenced by the type of media consumed.

Similar findings have been reported with digital media. Perceived peer norms have been shown to be greater than actual sexual risk behavior when examined in online youth social networks (Black et al., 2013). This is not surprising given that many youth choose to share information about their sexuality through their social networking site profiles, posting information about sexual desire/experience on blogs, and sharing sexualized pictures/videos through texting and social networking sites (Brown et al., 2009). Although it is not uncommon that adolescents overestimate peer risk behaviors, given that many youth choose to present themselves in this manner through social media, it may follow that social media leads to even greater misperceptions and hence a greater influence on sexual behaviors than traditional media. In particular, youth may be vulnerable to pressures perceived through social media as they have a need for peer acceptance and are still developing self-regulation skills (O'Keefe & Clark-Pearson, 2011). In fact, Moreno, Parks, Zimmerman, Brito, and Christakis (2009a), expressed a concern that teen sexual content in social media may increase perceptions that sex is normal or glamorous and risk free, particularly when negative consequences are not being shown. The authors suggested that this may increase pressure for abstinent youth to engage in sexual behaviors (Moreno et al., 2009b).

Finally, Gottfried, Vaala, Bleakley, Hennessy, and Jordan (2013) found that sexual content in television comedies was related to more positive views about having sex among youth, while that in dramas made them think more negatively about sex. The authors hypothesize that the finding may have been because the dramas were more likely to show the consequences of sex, while comedies had significantly fewer messages about

risk and responsibility. This lack of sexual consequences is also common in social networking. Although the current research does not address what role peer norms play in how media exposure is related to sexual behaviors, it suggests new interesting lines of research, such as the impact of perceived peer norms from social media versus traditional media versus in-person interactions.

Limitations

This study has several limitations. The sample of students is from public schools in three large school districts in the south, therefore it is not generalizable to all 7th and 8th grade students. Of note is that this sample consisted of almost half Hispanic students, and a quarter each Caucasian and African American students; although race was controlled for. Adolescents from other parts of the country may use and be affected by media differently. The data used in this analysis was from a cross-sectional survey so causation cannot be inferred. It could be that media exposure leads to sexual behavior, or that sexually active youth are more likely to engage in screen time. The data was self-reported by youth and may be affected by recall. However, numerous studies have shown that adolescents provide credible self-reported information (Brener et al., 2004). YRBS implementation procedures help ensure students perceive the survey to be important and know their responses are anonymous which improves honesty. Internal consistency checks are also conducted to identify and eliminate inconsistent responses (Brener et al., 2004). As mentioned previously, it is not known if adolescents included handheld devices in their estimated use of computer time, which may affect time reported. The survey questions also asked only about the amount of screen time and not the type of media consumed. Given previous research has found that sexual media exposure is related to more negative sexual attitudes and behaviors than non-sexual media (see introduction), it is noteworthy, that a relationship between sexual behaviors and general screen time, regardless of sexual content, was found in this study. Only the relationship between screen time and media was assessed, using demographics (gender, grade, race) as co-variables. There are other variables that could affect sexual behaviors, such as substance use, the nature of the media viewed, and parental monitoring or media controls used.

Recommendations and implications

Given the societal reliance on technology for information attainment, entertainment, and communication, daily screen time will undoubtedly continue to increase. Organizations committed to responsible media use among youth such as the American Academy of Pediatrics recommend parents limit media time for their children to less than two hours per day (American Academy of Pediatrics, 2013). This is a noble yet idealistic recommendation given the rapid cultural shift toward more usage of technology. More realistically, parents need practical strategies for managing the quality and content of the screen time consumed by their children. Strategies including regulation of their children's media choices including avoidance of inappropriate movies, video games

and websites by using the parental control features available on modern smartphones, computers and televisions. In the home, television and Internet access should be removed from the children's bedrooms and used only in public areas of the household.

Additionally, given social media use makes up a large portion of screen time, parents should oversee social networking activities by connecting with their children on these various platforms. By taking an active role in the social networking lives of their children, parents can also monitor trends among their children's peer groups. In addition to being vigilant about the volume, content, and quality of screen time, parents must also strive to model responsible media consumption to their children.

Health educators and teachers have an opportunity to intervene within schools by implementing media literacy programs to help students and their parents become more discerning media consumers. Media literacy curriculums teach people how to identify hidden influences in media messages, analyze these hidden messages, and offer skills on interpreting these messages in a healthy way (Thoman, 1998). There are many media literacy organizations including Media Matters by the American Academy of Pediatrics, the Center for Media and Child Health by Harvard School of Public Health and the Center for Media Literacy, committed to improving media literacy among children. For parents, Common Sense Media and Kids First! have created media rating guides to help parents make decisions about the appropriateness of movies, television shows and games.

In conclusion, with the rapid increase in the access to and types of media now used by teens, additional research to study the relationship between screen time and risky sexual behavior is warranted. It has taken years of research to establish links between media use and sexual behaviors. Future studies exploring whether parents use media controls or restrictions in addition to the specific type of media consumed by middle school students would be helpful to guide intervention efforts. Researchers would also benefit from more clearly identifying the types of media being used by adolescents when studying the influence on adolescent sexual behaviors; for example handheld devices should be included in the definition of computer use, and the types and time spent on each such as social media, games, finding information, etc. Mass media outlets could become an ally to promote sexual health education by including more responsible sexual content along with advertisements for birth control and STI prevention. Intervention at all levels, individual, intrapersonal, societal and policy, is necessary to reduce the host of deleterious health behaviors associated with excessive media use.

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**This article may provide one
Continuing Education Contact Hour Opportunity for CHES (Approval Pending)**

Instructions and self-study questions may be found on page 57

From the editor...

Greetings Gammans! As we put this issue to print, we have received sad news that the last living Co-Founder of Eta Sigma Gamma, Dr. William Bock has died. We extend our condolences to his family and his colleagues at Ball State University. Please read the tribute in this issue written by ESG historian, Dr. Rick Eberst. As Gammans, we all pledged our professionalism to further the ideals of this academic honorary which was realized due to the vision of the three Co-Founders (Drs. Warren Schaller, Robert Synovitz and William Bock) and the many talented health educators who built upon their vision. We will remain forever grateful for the vision and persistence of these three health educators and continue to help develop opportunities for professional growth for Gammans at all points in their careers.

This issue features a number of articles to enhance health education practice in the classroom highlighting the content areas of stress (refer to Hunter), sexuality education (see Rosen et al) and school-based gardening (refer to Ausherman et al). These practitioner-oriented articles provide contemporary approaches to traditional content areas. Additionally, read the article by Miller and Bice for lessons learned as a part of an implementation of the coordinated school health program. The research-centered articles focus on the correlation between screen time and sexual health (refer to Barr et), homeless veterans with diabetes (see Rojas-Guyler et al) and recruiting college students to become bone marrow donors (Kaster et al). I hope you will agree that *The Health Educator* continues to provide a wide variety of practitioner and research oriented articles for all Gammans. At the same time, if you have suggestions for what you would like to see included in the journal please email me at s.m.patterson@csuohio.edu