



# High texting rates mediate oral sex and intercourse experience in a longitudinal study of high school students <sup>☆</sup>



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## ABSTRACT

**Purpose:** Few studies link technology use to normative sexual outcomes despite concerns that high use may be accelerating sexual development. This study used longitudinal online survey data to predict sexual development (having had a boyfriend or girlfriend, first oral sex, first intercourse) and tests for mediation by four types of technology use common among adolescents: texting (from a mobile phone), general Internet/computer use, video gaming, and watching television.

**Methods:** Participants were 366 adolescents (37% male; 13–17 years) from eight Eastern Canadian high schools. All participants completed a range of measures assessing demographic information, sexual and relationship histories, and recent use of technologies. Participants (72%) completed the survey at a follow-up assessment two years later.

**Results:** After adjusting for age, higher levels of texting mediated the relationships in reports of both oral sex and sexual intercourse over time. The association between texting and sexual intercourse was moderated by parental closeness. No other technology was linked to sexual outcomes.

**Conclusions:** Texting appears to have unique features not shared by the other technologies, possibly related to its highly interactive nature. Insights regarding these outcomes are of value given the rapid uptake of new technologies by youth. Findings are discussed in terms of the role of technology in helping to meet intimacy and relational needs common to adolescents.

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## 1. Introduction

The rapid uptake of new technologies among youth (PEW, 2013; World Internet Project, 2009) has brought with it dramatic changes in the ways in which young people communicate, flirt, seek information, become aroused, connect and disconnect with others. Media, educators, clinicians, and policy makers have raised the alarm about the potential negative impact that technology may be having on adolescent development (Angelides, 2013; Choudhury & McKinney, 2013; Davies & Eynon, 2013), in terms of social skill development (Bonetti, Campbell, & Gilmore, 2010; Pierce, 2009), physical health (Arora et al., 2013; Iannotti, Kogan, Janssen, & Boyce, 2009; Rosen et al., 2014), and academic performance (Lee, 2014; Leung & Lee, 2012). Concerns about the impact of technology use on adolescent sexual development specifically

appear to have attracted the most attention (Hua, 2012; Peter & Valkenburg, 2006; Ybarra, Mitchell, Finkelhor, & Wolak, 2007). Most find that high technology use is linked to risky sexual development when technology use is directly sex-related, such as accessing pornography, sexting (i.e., sending sexually provocative content via text), or chatting explicitly online (Benotsch, Snipes, Martin, et al., 2013; Brown & L'Engle, 2010; Whiteley, Brown, Swenson, et al., 2012), but few have studied general use of technology. One study created a media stir by reporting that high levels of texting among US high school students was associated with more advanced rates of sexual experience and greater numbers of sexual partners compared to peers (Frank, Santurri, & Knight, 2010). This was the first indication that use of a widely-adopted form of technology might be influencing sexual development, possibly accelerating it.

Surprisingly little research appears to have followed up the initial findings linking texting and sexual activity. Is there something about texting that is different from other forms of communication and connection via technology use, such as computer use generally, gaming, or television? Some researchers have explained preferences in terms of the technology attributes. They argue that texting has become the preferred and dominant form of

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technology-based communication among young people because it is inexpensive, relatively unobtrusive, immediate, flexible, highly accessible, and promotes informal and candid exchanges (Bryant, Sanders-Jacson, & Smallwood, 2006; Park, Chung, & Lee, 2012; Reid & Reid, 2007). Texting also eliminates the demands to recognize and respond to social cues, especially nonverbal cues, to maintain attention and monitor one's self-presentation—all of which are required in face to face interactions, which often are challenging for young people developing intimacy and social skills (Ellison, Heino, & Gibbs, 2006; Kasesniemi & Rautiainen, 2002).

There clearly are variations across forms of technology in terms of the goals or needs that these forms meet (Rubin, 2002; Ruggiero, 2000). Assessing rates or preferences is an approach often fits well with the Theory of Emerging Adulthood which posits that the transition from adolescence to young adulthood is marked by an increasing emphasis on meeting needs relating to intimacy, identity and status amongst one's peers—needs that technologies often can help meet to some extent (Zimmer-Gembeck, Hughes, Kelly, & Connolly, 2012). Ultimately, adolescents use technology in part to explore aspects of their identity and to meet these related needs as they move through this stage of development (Shapiro & Margolin, 2014).

There also is a wealth of research examining the impact of media use on behavior (Gerbner, Gross, Morgan, & Signorielli, 1994; Ward, 2003). Preferences in media determine to a large extent the type of content to which an individual is exposed and this exposure in turn influences behavior outcomes, especially if the media content depicts appealing role models (Bandura, 1986). The media content also appears to prime constructs or schemas that ultimately guide future experiences and one's understanding of those experiences (Davies, Zhu, & Brantley, 2007; Jo & Berkowitz, 1994). The content of the media itself is often a concern, such as media containing explicit sexual material (Owens, Behun, Manning, & Reid, 2012; Rich, 2008), but is technology use alone linked to changes in the sexual development of youth over and above the media imagery to which youth are exposed? If technology use comprises a vector or conduit in adolescent development, as some have suggested (Brown, Steele, & Walsh-Childers, 2002), it may be linked to sexual development given the salience of sexual connection and intimacy goals in adolescence (Zimmer-Gembeck et al., 2012) and the needs that technology meets.

This study was designed to examine rates of use among adolescents in terms of texting, computer use (e.g., email, Internet surfing), video gaming, and television viewing. These technology forms vary quite notably in terms of the levels of immediacy, flexibility, privacy, and social exchange involved, but also their links to adolescent lives. For example, video gaming is a typically isolated activity, frequently involving aggressive content, and has been linked to poorer relationships with both parents and peers (Punamäki, Wallenius, Hölttö, Nygård, & Rimpelä, 2009). Texting is highly interactive and has been linked to more peer intimacy and support compared to other forms of technology use (Morey, Gentzler, Creasy, Oberhauser, & Westerman, 2013). Television viewing, especially entertainment content, is a highly passive activity, non-interactive, and is linked to lower sociability and academic achievement (Kirkorian, Wartella, & Anderson, 2008). However, direct comparisons are rare with regard to the different forms of technology commonly adopted by adolescents and parallels to sexual development remain largely unclear. This leads us to consider two key research questions: What are the links between rates of technology use to sexual milestones, such as onset of oral sex and sexual intercourse experience, among adolescents? Are milestones in sexual development more closely related to particular forms of technology use?

A large nationally representative study of 14,818 US and 7266 Canadian students (grades 6–10) found that rates of technology

use in general were negatively related to most positive health indices (e.g., quality of family relationships, physical health status) and positively related to a range of negative health indicators, such as health complaints, physical aggression, and smoking (Iannotti et al., 2009). In addition, researchers find that rates of technology use among adolescents often reflect levels of parental monitoring. Less integrated families, those characterized by low parent–child warmth, high permissiveness, and lower levels of involvement tend to report lower levels of monitoring of children's and adolescents' technology use in the home (Slack, Holl, McDaniel, Yoo, & Bolger, 2004; Valcke, Bonte, De Wever, & Rots, 2010). Lower monitoring and poorer relationship quality have been linked to participation in higher and earlier levels of sexual activity generally (Hadley et al., 2011; Huang, Murphy, & Hser, 2011; Kalina et al., 2013; Kapungu, Holmbeck, & Paikoff, 2006; Rodgers & McGuire, 2012). Greater time spent alone and having fewer friends also have been linked to high rates of social forms of technology use, such as Facebook® (Jin & Park, 2010). Overall, sociability or social connection appear closely linked to technology use (Räsänen & Kouvo, 2007). Furthermore, adolescents who date more frequently tend to report higher rates of technology use, particularly communicative forms such as cell phone use and text messaging (Coyne, Stockdale, Busby, Iverson, & Grant, 2011). Thus, the potential of parenting and social factors as moderating influences also was examined.

The current study used longitudinal data from a study of adolescent health to predict normative milestones in sexual development (i.e., having had a boyfriend or girlfriend, first oral sex, first intercourse) from four types of technology use: texting (from a mobile phone), general Internet/computer use, video gaming, and watching television. These forms continue to be rated as the most common forms among young people (Lapierre, Piotrowski, & Linebarger, 2012; Pew Internet, 2012), who tend to have the highest rates of all population groups (PEW, 2013), but also are forms that vary significantly in their attributes. Baseline levels of these technologies were examined to determine the potential mediating role in the relationship between reports of sexual milestones over time, in this case, over a two-year period. This research was designed to advance work analyzing the impact of technology on adolescents' sexual development and helps broaden our perspective regarding normative patterns of use.

## 2. Method

### 2.1. Participants

Participants were 366 adolescents (134 male, 232 female) adolescents between the ages of 13 and 17 years ( $M = 14.9$  years;  $SD = 0.86$ ). They were recruited from eight Eastern Canadian high schools to take part in a longitudinal study of adolescent health. Their ethnicities were White/Caucasian (90.3%), Asian (3.4%), Native American (2.2%), or other (4.1%) ethnicities. Most spoke English (95.9%) as their primary language. Most indicated that either their mothers (39%) or both their mothers and fathers (45%) were their primary caretakers. Parents had typically graduated from high school (20.8%), college or technical school (21.9%) or university (34.1%).

### 2.2. Measures

#### 2.2.1. Demographics

This measure was designed for the current study and was used to collect background information on age, gender, ethnic/racial background, primary language, family structure, and parental education.

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