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# An exploratory study of time spent with interactive technology and body mass among young adults

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ABSTRACT

Young adulthood (18–25 years old) is a risky time period for the development of obesity and is an understudied population in terms of identifying weight-related determinates. Previous research has identified correlations between Body Mass Index (BMI) and sedentary behaviors, including television, among children and adolescents. Young adults have an affinity for interactive technologies (i.e., email, cell phones, social networking and video chat), but at present no studies have investigated the association between BMI and interactive technologies. A major contribution from this study was the conceptualization of time spent with interactive technology as the dependent variable and Body Mass Index and the independent variable. Young adults ($N = 802$) reported their height, weight, and weekly time spent with interactive technology. Obese participants reported significantly more time spent with email, social networking, video chat, and total technology time than their non-obese peers. It is proposed that obese young adults use interactive technologies more frequently than non-obese young adults because interactive technologies facilitate unobtrusive interactions and a mechanism to control social interactions.



## 1. Introduction

Obesity among children, adolescents, and adults has become an important public health issue worldwide, but few studies have focused upon obesity in young adulthood (Nelson, Story, Larson, Neumark-Sztainer, & Lytle, 2008). In studies of children, adolescents, and adults, sedentary practices and behaviors have been associated with obesity and have been proposed as promising areas for obesity intervention (Leatherdale, 2010). For example, several studies have reported positive relations between time spent using media and technology (i.e., television, computer use, cell phones, video games) and Body Mass Index (BMI) scores among children and adolescents. These studies have assumed that the use of media and technology promotes sedentary behavior and therefore, the time that one devotes to media and technology may contribute to increases in BMI among children and adolescents (Arora et al., 2013; Crawford, Jeffery, & French, 1999; Leatherdale, 2010; Proctor et al., 2003). Few studies have investigated the role that technology plays in BMI among young adults (see Kuhlmann, 2013; Mamun, O'Callaghan, Williams, & Najman, 2013). The current study aimed to examine the relationships between access to interactive technology and BMI, gender and time spent with interactive technology, and BMI and time spent with interactive technology among young adults (18–25 years old).

### 1.1. Body mass index in young adulthood

The rapid development and subsequent adoption of various technologies during the last 50 years corresponds with changes in the human condition—we have also witnessed an expansion of body size (obesity) during the same five decades. Likewise, factors such as delayed marriage, delayed childbearing, and increased attendance in higher education have either extended the adolescent phase of development, or, according to some scholars,

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resulted in a new phase of development for 18–25 year olds entitled emerging adulthood (Arnett, 2000). The extension of adolescence has been marked by decreases in independence and prolonged opportunities for identity exploration. With these distinguishing developmental tasks researchers have argued that young adulthood is a risky time period for the development of obesity, poor diet, and unhealthy physical activity practices (Bonnie, Stroud, & Breiner, 2014; Nelson et al., 2008).

Obesity statistics in young adulthood have been tracked in national studies on adult obesity. The National Health and Nutrition Examination Survey (NHANES) collected BMI information between 1991 and 1998 from over 100,000 participants per year (Mokdad et al., 1999). The largest magnitude of BMI differences in this cross-sectional study was identified within the 19–29 year old age group, with differences ranging from 7.1% to 12.1%. The most recent reports from NHANES include BMI differences specifically for 20–34 year olds (National Center for Health Statistics, 2014). These results indicate that in 2012, 60.9% of males met the BMI criteria for being overweight and 28.9% men were obese, compared to 55.2% of women meeting the BMI criteria for overweight and 30.0% of women were obese. Rates of obesity among 20–34 year olds have increased by 7.2% for men and 1.7% for women between the years 2002 and 2012.

In another nationally representative study, the American College Health Association (2012) indicated that, among the 76,481 college students (mean age = 21.56) in this report, 21.8% (Male 27.8%, Female 18.7%) of the total sample met the criteria to be considered overweight and 12.2% (Male 12.6%, Female 11.9%) were 'obese.' Trends from these national research studies provide support for the contention that young adulthood is a risky time period for developing obesity. Nelson et al. (2008), in their article summarizing obesity in young adulthood, concluded:

> Although substantial evidence indicates that this is an important and vulnerable period for adverse weight-related behavior change, little work to date has sought to understand the modifiable determinants of weight-related factors among emerging adults, and few weight-related intervention strategies have been developed and tested in this population (p. 2210).

### 1.2. Time spent with interactive technology

Technology has evolved from non-interactive opportunities to absorb media (e.g., television, movies) to interactive opportunities that require social interaction using cell phones, social networking, email, and video chat (Jones, 2009). Young adults are active in their participation with interactive technology. Xenos and Foot (2008) concluded from their research on technology and young adulthood, "Clearly, coproductive interactivity is foundational to the way that young people, more than any other age group, engage with the internet" (p. 57). This observation is supported by the rapid expansion of young adults' ownership and use of interactive technology (Duggan & Rainie, 2012; Neilson., 2012; Pew Research Center, 2014a).

A clear majority of young adults in the United States have access to the internet using their home computers, laptop computers, tablets, and smartphones. The Pew Research Center (2014a) reported that 97% of adults between the ages of 18–29 use the internet. Neilson (2012), an organization that studies consumer behavior, reported that 62% of the people between the ages of 18–24 own smartphones. Young adults are utilizing the internet capabilities of these smart phones with 77% of 18–19 year olds reporting accessing the internet on their cell phones (Duggan & Rainie, 2012). The internet provides access to a variety of interactive media and researchers have begun to investigate what young adults are doing online. One study reported that 89% of 18–29 year old participants use social networking and are likely to use social networking more than any other age category (Pew Research Center, 2014b). Further, women (76%) and men (72%) both report using social networking. Less information is available about use of video chat technologies, but Rainie and Zickuhr (2010) reported that 29% of young adults (19–29 years old) participated in video calls, chats, or teleconferences.

Just a few studies have investigated the time that young adults spend on the internet. For example, Anderson (2001), nearly fifteen years ago, reported that the young adults ($n$ = 1300) in his study reported an average of 100 min online per day. Another study of young adults ($n$ = 95) and technology asked participants to retrospectively report time spent with email and social networking on the day of data collection (Subrahmanyam, Reich, Waechter, & Espinoza, 2008). Eight percent of Subrahmanyam et al.'s sample reported that they spent no time emailing, 74% indicated that they spent 30 min or less per day, and 18% stated they spent one to three hours per day. Additionally, 37% the sample reported no time accessing social networking sites; 36% said they spent 30 min or less, 18% spent one hour per day, and 9% spent two or more hours per day. This study appears to have been completed prior to the widespread adoption and increasing popularity of the smart phone. This assumption is based on both the publication date (2008) and the fact that participants identified MySpace as their most updated social network.

Junco and Cotten (2012) asked college students ($n$ = 1774) to self-report the amount of time they spent daily searching for information online, on Facebook, emailing, texting/talking on a cellphone, and instant messaging. On average, participants reported a cumulative seven hours a day with these technologies. A more recent study focused on young adults' ($n$ = 164; 19–22 years old) daily time spent with a variety of technologies that can be accessed on a cell phone (e.g., texting, calling, social media, music, etc.; Roberts, Yaya, & Manolis, 2014). Young adult women reported spending an average of 10 h a day utilizing a variety of technologies. In contrast, young adult men reported spending an average of 7.7 h using these technologies. It appears that there are some variances in the reports concerning the amount of time young adults spend with technology and that there are gender differences in time spent with technology. In this study we further explore young adult self-reported time spent with technology and potential gender differences.

### 1.3. Interactive technology and BMI

#### 1.3.1. Technology access and BMI

Some links between access to technology and BMI have been identified among adolescents (Adachi-Mejia et al., 2007; Jones & Vaterlaus, 2014). Access to technology in these studies was considered in terms of the presence or absence of TVs in adolescent bedrooms. Adachi-Mejia et al. (2007) identified that 27% of children (9–12 years old) who had a TV in their bedroom were obese and 17.7% met the criteria for being overweight. Further Jones and Vaterlaus (2014) reported that adolescents (eighth and ninth grade students) who met the criteria for being overweight or obese were more likely than their average weight peers to have electronic games and TVs in their bedrooms. These studies have focused on adolescents and non-interactive technologies. Presently, it is unclear if young adult access to interactive technology is related to young adult BMI.

#### 1.3.2. Technology time and BMI

Several studies have identified positive associations between time spent with television and increases in child/adolescent BMI (Arora et al., 2013; Crawford et al., 1999; Kautiainen, Koivusilta, Lintonen, Virtanen, & Rimpelä, 2005; Lowry, Wechsler, Galuska, Fulton, & Kann, 2002; Mamun, O'Callaghan, Williams, & Najman,