Southwestern Mass Communication Journal

A journal of the Southwest Education Council for Journalism & Mass Communication
ISSN 0891-9186 (Print); ISSN 2641-6743 (Online) | Vol. 38, No. 2

Gaming Disorder Among College Students: Impact on Social and Academic Life

Glenn A Flansburg, Ahmed Shatil Alam, & Umer Bilal
University of Oklahoma

The e-sports industry has enjoyed massive growth, ballooning to an industry valued at more than $1 billion annually. This study investigated the relationship between college students' excessive gaming, academic performances, social self-efficacy, and time displacement following a survey of Midwestern university students. Major findings of this study include excessive gaming has negative impacts on college students' academic performance, social self-efficacy, and time displacement.

Keywords: gaming addiction, academic performance, college students

---

Studies have shown excessive media consumption can lead to consequences consistent with those resulting from potentially addictive or dependence-causing activities or behaviors. Research on video games (Van Rooij et al, 2010) television (Finn, 1992; Horvath, 2004; Kubey & Mihaly, 2002; McIlwraith et al., 1991), the internet (Hawi & Samaha, 2016; Longstreet & Brooks, 2017; Mitchell & Beard, 2010; Ng & Wiemer-Hastings, 2005), and smartphones (Kim et al, 2014; Lee et al, 2014) has suggested the media are a compelling subject for studies on addiction and dependency. Each of these individual types of media contribute to a massive new form of media consumption known as electronic sports (esports). Seo and Jung (2016) conceptualized esports as an "assemblage of consumption practices" and described esports consumers as actors, viewers, and social media users. Such a broad description is required because esports incorporates competitive video gaming (typically over the internet), live video streaming of those contests, and an interactive social component.

The esports industry has enjoyed massive growth, ballooning to an industry valued at over $1 billion annually (Cullen, 2019). Even those beyond the gaming community have noticed, including the

British royal family. Prince Harry called for a ban on the popular game Fortnite, stating it was "created to addict" (Morris, 2019). Fortnite has also been singled out in divorce cases and for causing disturbances in professional sports teams' clubhouses (Detrick, 2018). The Olympic Council of Asia voted to include esports competitions in the 2022 Asia Games, prompting speculation that esports might be added as an event in the Olympic Games (Nielson & Karhulahti, 2017). Some competitors have carved out professional careers in esports (Bányani et al., 2019). In the United States, some colleges and universities have widely adopted esports clubs on their campuses. The National Association of Collegiate Esports (NACE, 2019) reported in early 2019 that more than 130 schools had adopted official esports clubs. Additionally, more than $15 million in scholarships had been earmarked for students interested in competing for the official university esports club and a few schools announced construction of theaters or arenas suitable to host esports competitions (Bauer-Wolf, 2019). In addition, in 2021, Facebook was renamed "Meta Platforms" and its chairman Mark Zuckerberg declared a company commitment to developing a "metaverse," which is often described as a hypothetical iteration of the Internet as a single, universal virtual world that is facilitated by the use of virtual reality (VR) and augmented reality (AR) headsets, and which incorporates many aspects of social media into a persistent three-dimensional world with the user represented as an avatar (Milmo, 2021).

As esports and the metaverse attract more consumers it may also increase exposure to vulnerable populations, i.e., those who are more likely to acquire problematic symptoms. Extensive research has identified college students as a population vulnerable to problem media use (Hawi & Samaha, 2016; Mitchell & Beard, 2010; O'Conner et al, 2009; Samaha & Hawi, 2016). Whereas the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5) (APA, 2013) did not include internet gaming disorder in its "Substance-related and Addictive Disorders" category, it did include the subject as worthy of future study (Potenza, 2014). In addition, the World Health Organization added gaming disorder to the section on addictive disorders in its *International Classification of Diseases* (ICD-11) in 2022 (WHO, 2022). The purpose of this study is to determine the extent to which college students are or could be vulnerable to addictive or dependence symptoms consistent with those found among the users of other media and media content.

LITERATURE REVIEW

Potenza (2014) noted one major change to the DSM-5 from previous volumes was the categorization of gambling disorder under the "non-substance-related disorders" category. Previous research has labeled internet and video game addiction as obsessive and compulsive behaviors, based on similarities to gambling addiction and compulsive shopping, since these disorders are not born from a chemical dependence (Ng & Wiemer-Hastings, 2005). Debate continues as to whether these non-substance-related dependencies should be labeled as addictions in and of themselves, or rather as correlated conditions (King & Potenza, 2019; Potenza, 2014). Before approaching esports as a separate entity, this study first considered addiction and dependence research on its components: video games, television viewing, internet/social media, and smartphones. Each of these individual components implies possible consequences of esports watching and playing.

Excessive Video Game Usage

Video game, as well as internet, addiction is not yet a DSM-5 diagnosis, but its definition is derived from DSM-IV criteria for addiction and obsession (Ng & Wiemer-Hastings, 2005). While the amount and quality of research in video game addiction has progressed much in the last ten years, it is

still in its infancy when compared to other more established addictions, such as pathological gambling (Griffiths et al., 2012; Fisher, 1994).

One problem with previous findings is the lack of well-validated diagnostic criteria for video game addiction, and as such, has used questions adapted from the diagnostic criteria for pathological gambling (Tejeiro & Bersabe, 2002). In 2007, the American Psychiatric Association reviewed whether video game addiction should be added to the DSM-5. The association concluded that there was not enough evidence to warrant the inclusion of computer game addiction as a disorder (Weinstein, 2010), based in part that there has been no consensus on an operational definition of video game addiction (Van Rooij et al, 2010). In fact, Weinstein (2010) continues by suggesting that it is not clear whether video game playing meets the criteria for DSM-5. However, based on published empirical studies, it appears that excessive video game playing can have potentially damaging effects upon individuals who appear to display compulsive and/or addictive behaviors (Griffiths et al., 2012). In recent years, several studies have demonstrated that at least a small group of gamers has trouble controlling their video game playing (Wan & Chiou, 2006; Ng & Wiemer-Hastings, 2005; Rehbein et al., 2015).

While academic debate continues whether excessive video game playing should truly be labelled an addiction, it is obvious that some gamers do have problems controlling their video game use (Van Rooij et al., 2010). It should also be noted that given the lack of consensus as to whether video game addiction exists and/or whether the term "addiction" is the most appropriate to use, some researchers have instead used terminology such as "excessive" or "problematic" to denote the harmful use of video games. Terminology for what appears to be the same disorder, and/or its consequences, include problem video game playing, problematic online game use, video game addiction, online gaming addiction, internet gaming addiction, and compulsive internet use (Griffiths et al, 2012).

Three different mechanisms have been suggested as driving excessive computer gaming: coping with frustration, stress, and fears; influencing several affective measures, most notably excitement, arousal, and frustration; and through effects on reward and sensitization (Weinstein, 2010). He also defines computer or video game addiction as excessive or compulsive use of computer and video games that interferes with daily life, such as isolation from other forms of social contact and focusing almost entirely on in-game achievements rather than real-life events. Griffiths (2005) has operationally defined addictive behavior as any behavior that features six core components of addiction: salience, mood modification, tolerance, withdrawal symptoms, conflict, and relapse. Utilizing these criteria, a 2007 study found that 12% of gamers (n=7,069) fulfilled at least three diagnostic criteria of addiction (salience or craving, mood modification, and withdrawal symptoms) regarding their gaming behavior (Grusser et al., 2007).

Television and Broadcast Studies on Addiction and/or Dependency

Several studies attempt to define television addiction, and most conclude that television dependency is tied to other issues. As with video games, research fails to support that excessive television viewing can be classified as an addiction using definitions for "addiction" as studied in connection to chemical dependencies. Many of these studies do comparisons to drug and alcohol addiction studies and find some mild similarities. The research implies that excessive television viewing, which is later cited for studies on other media, is more of a dependency than a definable addiction.

Anderson et al., (1996) noted that the mood management theory "predicts that people experiencing stress use television to block anxious thoughts and to replace dysphoric moods." In a

series of three related studies, Anderson and colleagues (Anderson et al., 1996) found that both men and women who were stressed watched more television, although the television programming they gravitated to for relief varied. The same study (Anderson et al., 1996) also demonstrates that there is a positive relationship between men's stress levels and the amount of television viewing. Rose and Friedman (1994) paid particular attention to men's consumption of televised sports, which they called the "strongest - and certainly most consistent – lure to the screen". Horvath (2004) studied the difference between what can be classified as "normal" television viewing versus problem television viewing in two studies using the Television Addiction Scale. The first study surveyed people at local public places in a Midwestern city and advocates that this convenience sampling method was an effort to maximize the inclusion of a more diverse sample. The second study had undergraduate students find people who self-identified as heavy television views and then surveyed them.

The Diagnostic and Statistical Manual (DSM-III-R) of the American Psychiatric Association (1987) removed the term "addiction" and replaced it with "dependence" in an effort to study television viewing in a similar fashion to substance dependence (McIlwraith et al., 1991). The approach looks at five out of nine criteria to diagnose a "mild dependence" including an increase in substance usage, failed attempts to control the substance use, withdrawal from other activities, an increase in problems due to substance usage, and withdrawal symptoms (McIlwraith et al., 1991). The DSM-5, as discussed by Sussan and Moran (2013), was expanded to include considerations such a need for increased amounts of the behavior in question—such as television viewing—an increase the behavior as time progresses, and an increase in other problems despite efforts to control the television viewing.

The majority of studies on television addiction or dependence note limited information because the data is derived from self-reporting which runs the risk of memory lapses, inaccurate records, and reports that don't include the very behaviors the subject intends to hide such as the amount of time they use on their dependent behavior. For example, the Anderson et al. (1996) study was conducted through mail surveys. Finn (1992) used self-reporting techniques for the undergraduate students that were used in the study. These self-reporting studies included various interview, survey, and note-taking recording methodologies.

Smartphone Addiction

Although smartphone usage has made life more convenient for many people, it has also brought about adverse effects in the realms of psychological well-being, interpersonal relationships, and physical health (Kim at al., 2014). The original smartphone, the Blackberry, even earned the nickname "crackberry" for its tendency to elicit addictive symptoms (Hackett, 2018). This issue has become a worldwide issue since the internet started dominating our daily life. Smartphone research began with internet use, moved to cell phone use, and then to the most recent development—smartphone addiction. Most of the research and studies keep cultivating in this field. For example, studies show an increase in frequency and time spent on smartphones is closely related to the severity of smartphone addiction (Lee et al., 2014). According to Lee et al. (2014), smartphone addiction could be considered a form of technological addiction. Moreover, addictive mobile phone use can be regarded as an impulse control disorder that does not involve an intoxicant and is similar to pathological gambling (Park & Lee, 2011).

Factors including social self-efficacy, family pressure, and emotional stress have positive predictive power for smartphone addiction (Chiu, 2014). Additional explanation about why people may become attached to their iPhone is the component of fear of missing out (Clayton et al., 2014), which is

operationally defined as "the fears, worries, and anxieties people may have in relation to being out of touch with the events, experiences, and conversations happening across their extended social circles" (Przbylski et al., 2013). More specifically, the emotional stress or the effects of psychology can be divided into two concepts based on the previous research—loneliness and shyness. Loneliness is defined as perceived deficiencies in one's ongoing relationships in both number and quality (Peplau, Russell, & Heim, 1979). In Korea, Park (2005) found that loneliness is positively correlated with mobile phone addiction among college students. Meanwhile, the key to shyness is anxiety over being with strangers or casual acquaintances including tension, concern, feelings of awkwardness and discomfort, and both gaze aversion and inhibition of normally expected social behavior." In addition, smartphones can give people access to entertainment like games, help shy people escape from uncomfortable situations while in public and indulge in a virtual, private mobile computing environment (Bian & Leung, 2015). The downside to this virtual world can be seen in statistics from South Korea, where youths addicted to smartphones have reached 11.4% of the population, with the top 2.2% facing difficulty living out their everyday lives due to addiction (Kim et al., 2014).

Internet Addiction

The subject of internet addiction attracted considerable research attention prior to, and sometimes in conjunction with, the proliferation of smartphone usage. As with video games, television, and smartphones, internet usage has been shown to share consequences consistent with those from gambling or substance addiction (Longstreet & Brooks, 2017; Song et al., 2004). Young and Rodgers (1998) explicated internet addiction as an impulse-control disorder and found a significant link between the disorder and depression. Research has also indicted college students are a vulnerable population to problem usage of the internet (Morahan-Martin & Schumacher, 2000; Odaci & Kalkan, 2010). Mitchell and Beard (2010) confirmed that internet addiction was prevalent amongst college students and developed a scale that measured four dimensions: problem usage, time spent, heavy usage, and withdrawal.

Esports Research

Esports is a phenomenon that incorporates aspects of video gaming, television viewing, and online social interaction (Seo & Jung, 2016). Weiss (2011) was one of the first to study uses and gratifications of esports players, finding the concepts of competition, challenge, and escapism as positively influencing esports participation. He did not find a positive relationship with social relationship, but Seo and Jung (2016) described a robust social network serving to sustain and enhance interest in esports. Xiao (2019) utilized the theory of reasoned action to analyze factors that inspired esports viewers (vs. players). He found three behavioral dimensions (aesthetics, drama, and escapism) as well as normative beliefs and subjective norms positively influenced intention to watch esports but did not find a positive correlation with social factors. Thus, differences may exist between those who watch and those who play. As research on excessive television viewing has shown, it is possible that even those who watch, but do not play, esports may be at risk for symptoms of dependence.

Not only may the preferred method of engagement (i.e., watching or playing) with esports develop into addictive behaviors but esports participation may be related to other problem behaviors. For example, Bányani et al. (2018) provided a comprehensive review of literature related to psychological studies of esports enthusiasts and reported several studies likened professional esports players to professional gamblers. Macey and Hamari (2017) found no relationship between those who

played video games and those who engaged in online gambling, but those who watched esports did have a statistically significant relationship with online gambling. Thus, esports viewers are a population of interest, particularly in context of statistics that indicate the esports gambling market has surpassed that of legal sports gambling in the U.S. (Holden et al., 2017). Pizzo et al. (2018) provided a comparison of esports and traditional sports spectators and, although they found many similarities, they noted important differences such as esports fans rated the concept of athletic skill as a more important factor than did traditional sports fans. The similarities included factors such as aesthetics, drama, entertainment, and social opportunities. Finally, Nielsen and Karhulati (2017) explained problems with existing diagnostic criteria in differentiating problematic esports play from competitive esports play and Cunningham et al. (2018) determined esports research necessitated more "theoretical attention" to truly advance scholarship on the topic.

Gaming and Academic Performance

The relationship between gaming and academic performance is complex. Some studies (Drummond & Sauer, 2014; Prena & Weaver, 2020) found little or no negative effect of gaming on academic performance, while a study conducted by Posso (2016) found those who played games almost every day reported better grades. However, other studies (Stevens et al., 2020; Anderson & Dill, 2000; Gentile, et al., 2011; Anand, 2007) academic performance and gaming are inversely correlated. Stevens and his colleagues (2020) conducted a latest study on a large-scale college student participants' gaming and their academic performances. Researchers (Stevens et al., 2020) found that 10% of 43,000 undergraduate student-participants reported that their academic performance was negatively impacted by internet use/computer gaming. Time spent on different types of gaming has negative relationship (Anderson & Dill, 2000; Gentile, et al., 2011) and correlation (Anand, 2007) with academic performance. Anderson and Dill (2000) conducted a survey on 227 undergraduate students from a Midwestern university and found time spent playing violent video games had potential detrimental impacts on students' academic performance (Anderson & Dill, 2000). Burgess et al., (2012) conducted another study, on 671 college students' gaming experience and school performance, which concluded that video gamers reported lower GPAs. The researchers also found that the gamers' gender also play a role in their low GPAs. The college students also reported that they played video games to evade their home assignments (Burgess et al., 2012). The study also reported an inverse relationship between the playing of violent games and school performance (Burgess et al., 2012). Two other studies (Anand, 2007; Gentile, et al., 2011) identified a negative relationship between academic performance and time spent on gaming (Anand, 2007) and pathological gaming habits (Gentile, et al., 2011). Two early study (Harris & Williams, 1985; Lin & Lepper, 1987) found that time spent playing videogames negatively correlated with English grades among native English-speaking students and mathematics competence. However, in one of the recent studies on gaming Prena and Weaver (2020) reported a small significant inverse correlation between preferences for action videogames and academic performance. Another interesting finding of the study, conducted on 272 college students, was non-gamers spent significantly less time studying on the weekend than their gamer fellows (Prena & Weaver, 2020).

Drummond and Sauer conducted two studies (2014 and 2020) on large samples - 192,000 adolescent students and 219,000 students - and concluded that academic performance and video gaming habits have no significant impact on academic performance. Posso (2016), however, found an even more

positive relationship between gaming and academic performance. They reported that those who played games every day reported better grades.

Two recent studies (Islam et al., 2020; Gómez-Gonzalvo, Devís-Devís, & Molina-Alventosa, 2020) found mixed effects of gaming on academic performance. Islam et al. (2020) carried out a survey on 1704 adolescent students, aged between 14-17 years, in Australia, reported that one sixth of video gamer-students who played on weekdays scored better in reading than their non-gamer counterparts. However, Islam et al. (2020) also found that electronic gaming and internet addiction have detrimental impact on academic achievement. Gomez-Gonzalvo et al. (2020), conducted a survey on 1060 Spanish adolescents, found that gamers who play longtime on weekend get better school grades and gamers who spend longer time on weekdays may fail more subjects.

Social Self-Efficacy and Gaming

Self-efficacy, a key concept of the social cognitive theory of Albert Bandura (Bandura, 1977; 1986; and 1997), refers to a person's belief in her or his capacity to perform specific and required behavior successfully to produce outcomes. Self-efficacy reflects an individual's conviction in his or her ability to have control over one's own motivation, behavior, and social environment (Carey & Forsyth, 2009). Guided by the self-efficacy concept, Jeong and Kim (2011) used another concept called social self-efficacy in their study on gaming and social activities of high school students in South Korea. It refers to an individual's self-conviction to maintain their social relationships (Jeong & Kim, 2011). They also argued that there are two types of social self-efficacy – online and offline (Jeong & Kim, 2011). When people have greater online social self-efficacy, they successfully maintain their social relationships online, and when an individual successfully maintains their social relationships offline then it refers to as offline social self-efficacy. Earlier research found that the more a person has become involved in gaming or gets addicted to gaming, his or her offline or real-life social self-efficacy is expected to have decreased (Young, 2004; Jeong & Kim, 2011; Liu & Kuo, 2007). In simple terms - gaming impacts one's social relationships at home, school, and work negatively. Bacovsky (2020 concluded that extensive gaming may have adverse effects on adolescents' attitudes toward civic activities.

Yee (2001; 2006; and 2009) did a series of studies on gaming and social relationships and found gamers' positive attitudes toward their online friends. Many gamers see their digital friendships as comparable with or better than their real-life relationships (Yee, 2001; 2006; 2009). Hertlein and Hawkins (2012) conducted a meta-analysis on a total of 18 articles on gaming and interpersonal relationship published between 1998 and 2010. They found that online gaming has impact on a couple's Ife. King and Delfabbro (2014) reported that people who play games feel "useless" and "worthless" in real-world settings and experience more self-worth and "higher social status" in-game. A latest survey on gaming in the United States, however, found video games positive impact on society as games help to develop community (Entertainment Software Association, 2021). The survey results also show that gaming has become a family affair as 74% of parents in 2021 reported playing games with their children at home, while the percentage was 55% in 2020 (Entertainment Software Association, 2021). More than half of the respondents in the survey reported that gaming is a way of spending their time with families (Entertainment Software Association, 2021).

Time Displacement

The displacement theory claims that any time spent in front of a computer has a detrimental impact on mental health since it takes away from time spent doing healthier things like physical exercising (Boers et al., 2019). Pearson et al. (2014) found a weak relationship between sedentary behavior and physical activity, but they did find a negative correlation between the two variables which was in line with displacement hypothesis. This weak association can be due to the changing modality of technology, such as video games are no longer played only by sitting on a couch (Pearson et al., 2014). "Relative to a single sedentary behavior, aggregated sedentary time may correlate more strongly with physical activity because it accounts for a larger proportion of daily time uses" (Pearson et al., 2014). Spending more time on one activity causes time reduction for another (Cheng et al., 2020). Bacovsky (2020) concludes that it can affect prosocial attitudes because "leisure activities replace civic activities in an individual's daily life" (p. 1146).

When it is not possible to perform two tasks at the same time, one activity may replace the other (Gabor, 1981). There is still need for strengthening the evidence for time displacement hypothesis (Pearson et al., 2014), but there is "small significant correlation between video gaming and body mass overall" in adults but not in children and adolescents (Marker et al., 2019, p. 7). Marker et al. (2019) did find a small indirect effect of time displacement where adults who played video games gained more body mass. Cheng et al (2020) also found a negative correlation between time spent on games, social networking, and the perceived family support. A decline in social networking and family support, a subsequent result of spending more time on gaming, may increase the depression level (Cheng et al., 2020). Activities requiring less physical effort such as video games can replace activities requiring more physical effort due to time constraints and both activities may compete for time (Henchoz et al., 2015). "While the displacement hypothesis may be relevant in the entire continuum of video gaming time, and its effect grows as playtime increases, the absence of aggression imprinting forces at low levels of gaming makes the displacement hypothesis more dominant at low levels of video gaming time" (Turel, 2020, p. 3).

RESEARCH QUESTION AND HYPOTHESES

RQ: Does excessive online video game usage foster virtual social networks?
H1: Excessive video game usage will have a negative impact on student's academic studies.
H2: Excessive video game usage will have a negative impact on students' social self-efficacy.
H3: Excessive video game usage will have a negative impact on student's sense of time.

METHODS

This study's target research population included undergraduate and graduate students collected from a survey distributed to a purposive sample derived from members of a major Midwestern university's student body following Institutional Review Board approval in 2022. The survey was constructed in and distributed online through Qualtrics to the university's undergraduate and graduate students. Use of an online survey is deemed appropriate given the inherent digital literacy required to consume esports and other online video games. Respondents were entered in a drawing for one $50 Amazon gift card.

The sample included 508 responses. After removing responses for students who identified themselves as under the age of 18 and removing incomplete responses, the sample was reduced to 407

responses with a mean age of 22.9 ranging from 18 to 56. 51.4% of respondents identified themselves as male, 41.8% as female, 6.1% as non-binary, and .7% preferring not to say. Most respondents were upperclassmen with 24.1% identifying as seniors, 19.9% as juniors, 13.8% as sophomores, and 18.4% as freshmen, 33.8% were graduate students with the majority of those being master's students. 47.2% of respondents identified as being employed part-time versus 39.8% were not employed at all. The remaining 11.5% identified as being employed full-time. The overwhelming majority of respondents, 79.1%, identified themselves as being white/Caucasian. The number of days per week respondents devoted to playing video games was relatively evenly divided across all days, though 100 respondents declined to provide a response. This reduced the sample size to 307.

The survey contains a total of 27 questions and mainly centers on "time displacement," "social self-efficacy," "academic impact," and collecting the appropriate "demographic information." The questions are based on DSM-5 focused studies (Mitchell & Beard, 2010; Kim et al., 2014) for other related types of dependencies, such as internet and social media, and involve the following six factors: preoccupation; loss of connections with family and friends; loss of interest in other activities; continued use of video games despite knowledge of psychosocial problems; has deceived others regarding amount of gaming; and has jeopardized or lost a significant education because of gaming. The questions were presented using a five-point Likert-like scale. Respondents were provided with statements, such as "Time really gets away from me when I start playing video games/virtual activities," and with the options starting with "strongly disagree" to "strongly agree." Several of the demographic questions included nominal and text entry options.

To measure academic impact, five items were used to collect responses. Cronbach's alpha measure for academic impact was .81. To measure social self-efficacy, seven items were used to collect responses, and Cronbach's alpha measure was .83. To measure time displacement, six items were used, and Cronbach's alpha measure was .79.

RESULTS

An independent-samples *t* test comparing the mean scores of the three factors, time displacement, social self-efficacy impact, and study impact, with gender found a significant difference between the means of time displacement and male vs. not-male ($t(405) = 2.285$, $p < .05$). The mean for males was significantly higher (M = 2.4250, *sd* = .8703) than the mean for not-males (M = 2.2374, *sd* = .7811). We computed a one-way ANOVA comparing the three factors plus number of days a week playing video games with age, race, gender, employment, and school year. A significant difference was found among employment status ($F(2, 398) = 3.061$, $p < .05$) and social self-efficacy impact. Tukey's *HSD* was used to determine the nature of the differences between employment status and social self-efficacy impact. This analysis revealed that students who were employed full-time scored higher ($M = 2.4894$, $sd = .8184$) than students who were part-time employed ($M = 2.1642$, $sd = .8688$).

Students who were not employed ($M = 2.3232$, $sd = .9369$) were not significantly different from either of the other two groups. In addition, a significant different was found among students school year ($F(5, 401) = 2.283$ $p < .05$) and the impact on their studies. Again, Tukey's *HSD* was used to determine the nature of the differences between school year and study impact. This analysis revealed that students who were sophomores ($M = 2.3464$, $sd = .94156$) scored higher than freshmen ($M = 2.1200$, $sd = .8884$), juniors ($M = 2.0321$, $sd = .8749$), seniors ($M = 2.2184$, $sd = .9658$), and graduate students ($M = 1.8877$, $sd = .8884$). Other school years were not significantly different from each other. A significant

difference was found among gender ($F(3, 303) = 3.875$, $p < .01$) and number of days per week playing video games. Tukey's *HSD* was used to determine the nature of the differences between gender and the number of days per week playing video games.

Students who identified as male ($M = 3.91$, $sd = 2.034$) scored higher on number of days per week playing video games than females ($M = 3.13$, $sd = 1.853$) and non-binary/third gender ($M = 3.81$, $sd = 2.105$). There was no significant difference between females and non-binary/third gender. In addition, a significant difference was found among gender ($F(3, 403) = 2.729$, $p < .05$) and time displacement. Tukey's *HSD* was used to determine the nature of the differences between gender and time displacement.

Again, students who identified as male ($M = 2.425$, $sd = .8703$) scored higher than those who identified as females ($M = 2.239$, $sd = .7711$) and non-binary/third gender ($M = 2.3867$, $sd = .7813$). There was no significant difference between females and non-binary/third gender. A third significant difference was found among gender ($F(3, 403) = 4.634$, $p < .01$) with social self-efficacy impact. Tukey's *HSD* was used to determine the nature of the differences between gender and social self-efficacy impact. Students who identified as male ($M = 2.363$, $sd = .9077$) scored higher on social self-efficacy impact than other genders ($M = 2.1589$, $sd = .8666$).

A simple linear regression was calculated to predict participant's study hours based on the number of days a week they play video games. A significant regression equation was found ($F(6, 285) = 2.516$, $p < .05$), with an R^2 of .050. Participants' predicted study hours is equal to 4.342 - .572(DAYSPERWEEK_PLAYING_VIDEOGAMES). Participants' average study hours decreased .572 hours for each additional day of week playing video games.

A multiple linear regression as calculated to predict participants' academic study impact based on how many days a week spent playing video games and their school year. A significant regression equation was found ($F(2, 304) = 9.064$, $p < .001$), with an R2 of .056. Participants predicted academic impact is equal to 2.114 + .081(DAYSPERWEEK_PLAYING_VIDEOGAMES) - .097(SCHOOL_YEAR), where SCHOOL_YEAR is coded as 1 = freshman, 2 = sophomore, 3 = junior, 4 = senior, 5 = master's graduate student, and 6 = doctorial graduate student. Participants' impact on academic studies increased by .081 for each additional day of week spent playing video games, and earlier school year students had their academic studies impacted more by .097 per year. Both SCHOOL_YEAR and DAYSPERWEEK_PLAYING_VIDEOGAMES were significant predictors and H1, excessive video game usage will have a negative impact on student's academic studies was supported.

A simple linear regression was calculated to predict participants' impact on their social self-efficacy on their number of days a week spent playing video games. A significant regression equation was found ($F(1,305) = 66.909$, $p < .001$), with an R^2 of .180. Participants' predicted impact on social self-efficacy is equal to 1.589 + .184(DAYSPERWEEK_PLAYING_VIDEOGAMES). Participants' average social self-efficacy impact increased by .184 for each additional day of week spent playing video games. H2, excessive video game usage will have a negative impact on students' social self-efficacy was supported.

A multiple linear regression was calculated to calculated to predict participants' impact on time displacement based on the number of days a week spent playing video games and race. A significant regression equation was found ($F(2, 304) = 27.880$, $p < .001$), with an R^2 of .155. Participants' impact

on time displacement is equal to 1.369 + .141(DAYSPERWEEK_PLAYING_VIDEOGAMES) + .361(RACE) where RACE is coded as 1 = White and 2 = Not White. Participants impact on time displacement increased by .141 for each additional day of week spent playing video games, and those participants who identified as white had a time displacement increase of .361 over those who identified as not white. H3, excessive video game usage will have a negative impact on student's sense of time was supported. In addition to race and number of days spent playing video games a week having an impact on time displacement, age had a near significance ($p = .058$, $\beta = -.022$), suggesting that younger students may have more of an impact on time displacement than older students.

A simple linear regression was calculated to predict participants' impact on fostering virtual friends based in the number of days a week spent playing video games. A significant regression equation was found (F (1, 305) = 24.076, $p < .001$), with an $R^2 = .073$.

Participants' predicted impact on fostering virtual friendships is equal to 1.343 + .134(DAYSPERWEEK_PLAYING_VIDEOGAMES). Participants' average impact on fostering virtual friendships increased by .134 for each additional day of week spent playing video games. RQ1, does excessive online video game usage foster virtual social networks, is answered, suggesting that the more students spend online playing video games with people they have never met does help foster those friendships creating friendships that are as meaningful as their real-life friends.

DISCUSSION

This quantitative research's goal is to assess whether video gaming has any effect on college students' academic and social self-efficacy in real life, given the increase of colleges and universities awarding scholastic scholarships for esports and the potential for video games to be problematic for college students. In doing so, this research has tested three hypotheses that excessive video gaming may have negative impacts on college students' academic performance, social self-efficacy, and their sense of time. The findings of the research were statistically significant and supported all three hypotheses.

A sizable number of studies have investigated the relationship between academic performance and gaming, and a number of studies were on adolescents (Harris & Williams, 1985; Lin & Lepper, 1987; Islam et al., 2020; Gomez-Gonzalvo et al., 2020; Drummond & Sauer, 2014 and 2020), while some other investigated college students (Prena & Weaver, 2020; Stevens et al., 2020; Burgess et al., 2012; Anderson & Dill, 2000). This latest study is contributing to gaming scholarships, especially for college students, and concludes that excessive gaming time has a significant and strong negative effect on academic performance contrary to some recent studies' (Prena & Weaver, 2020; Drummond & Sauer, 2014 and 2020; Islam et al., 2020; Gomez-Gonzalvo et al., 2020 and Posso, 2016) findings that gaming has no or little, or positive relationship with academic performance. Impact on college student participants' academic studies increased for each additional day of the week they spent playing video games, this study also concludes that earlier school year students had their academic studies negatively impacted by their excessive gaming habit. Participants' average study hours declined for each additional day of week playing video games. Hence, the findings also support the evidence portrayed by earlier studies (Harris & Williams, 1985; Lin & Lepper, 1987; Islam et al., 2020; Gomez-Gonzalvo et al., 2020; Stevens et al., 2020) that video gaming has an inverse relationship with students' academic performance.

This study found that participants' average social self-efficacy impact increased for each additional day of a week spent playing video games, which means, this study suggests that excessive video game usage will have a negative impact on students' social self-efficacy. This finding is also in

line with the findings of previous studies by Jeong & Kim (2011); Young (1998 and 2004); Liu & Kuo (2007); and Bacovsky (2020) and portrays the opposite finding of the Entertainment Software Association (2021)'s that video gaming has positive relationship in maintaining family and social relationship. This study also found that gender also plays a role in students' social self-efficacy, and male students reported higher social-self efficacy than students of other genders – female and non-binary.

This latest study also investigates participants' impact on fostering virtual friends based in the number of days a week spent playing video games, and it found that excessive online video game usage foster students' usage of virtual social networks. From this, the research suggests conclude when students spend time online playing video games with people they have never met, that does help foster those friendships that are as meaningful as their real-life friends. This finding also supports what Yee (2001, 2006, 2009) found in that gamers showed positive attitudes toward their online friends. The findings of the latest study also suggest the idea, reported by a previous study (King & Delfabbro, 2014), that people who play games feel "useless" and "worthless" in real-world settings and experience more self-worth and "higher social status" in-game.

The displacement hypothesis posits that all screen time negatively affects mental well-being because it displaces time participating in healthier activities, such as physical exercise (Boers, Afzali, Newton, & Conrod, 2019). Investing more leisure time in gaming may reduce time spent social networking in real life and, thus, the opportunities of reaping support from social network members. In line with the time-displacement hypothesis, gaming time is inversely associated with both social networking time and perceived family support, which is inversely associated with subsequent levels of depression (Cheng, Lau, & Luk, 2020), however, Pearson et al., (2014) and Marker, Gnambs, & Appel (2019) suggest that it remains unclear whether the time spent on playing video games comes at the expense of offline activities. Our study found that participants' impact on time displacement increased for each additional day of a week spent playing video games. The participants who identified as white had more time displacement because of gaming than of those who identified as not white. Therefore, we conclude that excessive video game usage will have a negative impact on students' sense of time. Our research also suggests that younger students may have more of an impact on time displacement than older students.

CONCLUSION

Despite serving the gaming research trend with its statistically significant results stemming from the survey of students from a Midwestern university in the U.S., this study has some limitations. Study findings are not representational to all college students and this study did not measure media usage and political attitudes of gamers, which future studies could investigate. The study also investigated video gaming as a single concept while there are diverse types of video games that are available in the market, for which future studies could also investigate the effects of different types of video games on this study's dependent variables – academic performance, social self-efficacy, and time displacement. In addition, the days of week students played video games was not factored into the analysis and, as prior research has indicated, a difference exists between playing video games on the weekend and playing them on weekdays. The authors believe this latest study contributes to gaming research and social cognitive theory's usage in gaming scholarship. College administrators, the gaming industry, and

families could get the notion of excessive gaming's impact on study and social life of young people from this study's findings.

REFERENCES

Anand, V. (2007). A study of time management: The correlation between video game usage and academic performance markers. *CyberPsychology & Behavior, 10*(4). 552-559. https://doi.org/10.1089/cpb.2007.9991

Anderson, C. A., & Dill, K. E. (2000). Video games and aggressive thoughts, feelings, and behavior in the laboratory and in life. *Journal of Personality and Social Psychology, 78*(4). https://doi.org/10.1037/0022-3514.78.4.772

Anderson, D. R., Collins, P. A., Schmitt, K. L., & Jacobvitz, R. S. (1996). Stressful Life Events and Television Viewing. *Communicaiton Research*, 243-260.

APA. (2013). *Diagnostic and Statistical Manual of Mental Disorders.* Arlington, VA: American Psychiatric Publishing.

Bacovsky, P. (2020). Gaming alone: Videogaming and sociopolitical attitudes. *New Media & Society, 23*(5), 1133-1156. https://doi.org/10.1177/1461444820910418

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1997). *Self-Efficacy: The exercise of control.* New York, NY: W. H. Freeman.

Bányani, F., Griffiths, M. D., Kiraly, O., & Demetrovics, Z. (2019). The Psychology of Esports: A Systematic Literature Review. *Journal of Gambling Studies*. 351-365.

Bauer-Wolf, J. (2019, February 12). *Video Games: Entertainment of Sports?* Retrieved from Inside Higher Ed: https://www.insidehighered.com/news/2019/02/12/new-frontier-college-athletics-video-games

Bian, M., & Leung, L. (2015). Linking Loneliness, Shyness, Smartphone Addiction Symptoms, and Patterns of Smartphone Use To Social Capital. *Social Science Computer Review*, 61-79.

Boers, E., Afzali, M. H., Newton, N., & Conrod, P. (2019). Association of screen time and depression in adolescence. *JAMA Pediatrics, 173*(9). Retrieved from https://doi.org/10.1001/jamapediatrics.2019.1759

Burgess, S. R., Stermer, S. P., & Burgess, M. C. (2012). Video game playing and academic performance inc college students. *College Student Journal, 46*(2), 376-387.

Carey, M. P., & Forsyth, A. D. (2009). *Self-efficacy teaching tip sheet* Retrieved from American Psychological Association: https://www.apa.org/pi/aids/resources/education/self-efficacy

Cheng, C., Lau, Y., & Luk, J. W. (2020). Social capital-accrual, escape-from-Self, and time-displacement effects of internet use during the COVID-19 stay-at-home period: Prospective, quantitative survy study. *Journal of Medical Internet Research, 22*(12). Retrieved from https://doi.org/10.2196/22740

Chiu, S. (2014). The Relationship between Life Stress and Smartphone Addiction on Taiwanese University Students: A Mediation Model of Learning Self-Efficacy and Social Self-Efficacy. *Computers in Human Behavior*, 49-57.

Clayton, R. B., Leshner, G., & Almond, A. (2014). The Extended iSelf: The Impact of iPhone Separation on Cognition, Emotion, and Physiology. *Journal of Computer-Mediated Communication, 20*(2), 119-135.

Cullen, J. (2019, February 12). *Report: Esports to break $1billion in worldwide revenues in 2019*. Retrieved from Yahoo! Finance: https://finance.yahoo.com/news/report-esports-break-1-billion-204700660.html

Cunningham, G. B., Fairley, S., Ferkins, L., Kerwin, S., Lock, D., Shaw, S., & Wicker, P. (2018). Esport: Construct Specifications and Implications for Sport Management. *Sport Management Review*, 1-6.

Detrick, H. (2018, September 17). *'The Digital Revolution Has Introduced New Addictions.' Fortnite Is Being Cited in Divorce Cases*. Retrieved from Fortune: https://fortune.com/2018/09/17/fortnite-addiction-divorce/

Drummond, A., & Sauer, J. D. (2014). Video-games do not negatively impact adolescent academic performance in science, mathematics or reading. *PloS One, 9*(4).

Drummond, A., & Sauer, J. D. (2020). Timesplitters: Playing video games before (but not after) school on weekdays is associated with poorer adolescent academic performance. A test of competing theoretical accounts. *Computers & Education*, 144.

Entertainment Software Association. (2021). *Essential Facts About the Video Game Industry*. Retrieved from Entertainment Software Association: https://www.theesa.com/resource/2021-essential-facts-about-the-video-game-industry/

Finn, S. (1992). Television "Addiction?" an evaluation of four competing media-use models. *Journalism & Mass Communication Quarterly*, 422-435.

Fisher, S. (1994). Identifying Video Game Addiction in Chidren and Adolescents. *Addictive Behaviors*, 545-553.

Gentile, D. A., Choo, H., Liau, A., Sim, T., Li, D., Fung, D., & Khoo, A. (2011). Pathological video game use among youths: a two-year longitudinal study. *Pediatrics, 127*(2).

Gómez-Gonzalvo, F., Devís-Devís, J., & Molina-Alventosa, P. (2020). Video game usage time in adolescents' academic performance. *Comunicar, 28*(65), 89-99.

Griffiths, M. D. (2000). Does Internet and Computer "Addiction" Exist? Some Case Study Evidence. *CyberPsychology & Behavior*, 211-218.

Griffiths, M. D. (2005). A "Components" Model of Addiction Within a Biopsychosocial Framework. *Journal of Substance Use*, 191-197.

Griffiths, M. D., Kuss, D. J., & King, D. L. (2012). Video Game Addiction: Past, Present and Future. *Current Psychiatry Reviews*, 1-10.

Grusser, S. M., Thalemann, R., & Griffiths, M. D. (2007). Excessive Computer Game Playing: Evidence for Addiction and Aggression? *CyberPsychology & Behavior*, 290-292.

Hackett, R. (2018, November 17). *Cyber Saturday – Blackberry's biggest buy, Facebook's crisis management, Assage's secret charges*. Retrieved from Fortune: http://fortune.com/2018/11/17/blackberry-cylance-facebook-julian-assange/

Harris, M. B., & Williams, R. (1985). Video games and school performance. *Education, 105*(3). Retrieved from http://web.b.ebscohost.com/abstract?site=ehost&scope=site&jrnl=00131172&AN=4732020&h=Ho7twoYIm1GmZEwgY5dA1LGahRLZZ0jXVxMReds9InBRf0EtaOrbA7w6AyWCL9h63P7rSKY40PdRBFut1yG8Gg%3d%3d&crl=f&resultLocal=ErrCrlNoResults&resultNs=Ehost&crlhashurl=login.aspx%3fdire

Hawi, N. S., & Samaha, M. (2016). The Relations Among Social Media Addiction, Self-Esteem, and Life Satisfaction in University Students. *Social Science Computer Review*, 576-586.

Henchoz, Y., Studer, J., Deline, S., N'Goran, A. A., Baggio, S., & Gmel, G. (2015). Video gaming disorder and sport and exercise in emergin adulthood: A longitudinal study. *Behavioral Medicine, 42*(2), 105-111. Retrieved from https://doi.org/10.1080/08964289.2014.965127

Hertlein, K. M., & Hawkins, B. P. (2012). Online Gaming Issues in Offline Couple Relationships: A Primer for Marriage and Family Therapists (MFTs). *Qualitative Report, 17*(15).

Holden, J. T., Rodenberg, R. M., & Kaburakis, A. (2017). Esports Corruption: Gambling, Doping, and Global Governance. *Maryland Journal of International Law*, 236-273.

Horvath, C. (2004). Measuring Television Addiction. *Journal of Broadcasting & Electronic Media*, 378-398.

Islam, M. I., Biswas, R. K., & Khanam, R. (2020). Effect of internet use and electronic game-play on academic performance of Australian children. *Scientific Reports, 10*(1), 1-10.

Jeong, E. J., & Kim, D. H. (2011). Social Activities, self-efficacy, game attitudes, and game addiction. *CyberPsychology, Behavior, and Social Networking, 14*(4), 213-221.

Kim, D., Lee, Y., Lee, J., Nam, J. K., & Chung, Y. (2014). *Development of Korean Smartphone Addiction Proneness Scale for Youth*. Retrieved from PLoS ONE: https://doi.org/10.1371/journal.pone.0097920

King, D. L., & Delfabbro, P. H. (2014). The cognitive psychology of Internet gaming disorder. *Clinical Psychology Review, 34*(4), 298-308.

King, D. L., & Potenza, M. N. (2019). Not Playing Around: gaming Disorder and the International Classification of Diseases (ICD-11). *Journal of Adolescent Health*, 5-7.

Kubey, R., & Mihaly, C. (2002). Television addiction is no mere metaphor. *Scientific American*, 74-80.

Lee, H., Ahn, H., Choi, S., & Choi, W. (2014). The SAMS: Smartphone Addiction Management System and Verification. *Journal of Medical Systems*.

Lin, S., & Lepper, M. R. (1987). Correlates of Children's Usage of Videogames and Computers. *Journal of Applied Social Psychology, 17*(1), 72-93.

Liu, C. Y., & Kuo, F. Y. (2007). A study of Internet addiction through the lens of the interpersonal theory. *CyberPsychology & Behavior, 10*(6), 799-804.

Longstreet, P., & Brooks, S. (2017). Life satisfaction: A key to managing internet & social media addiction. *Technology in Society*, 73-77.

Macey, J., & Hamari, J. (2018). Investigating Relationships Between Video Gaming, Spectating Esports, and Gambling. *Computers in Human Behavior*, 344-353.

Marker, C., Gnambs, T., & Appel, M. (2019). Exploring the myth of the chubby gamer: A meta-analysis on sedentary video gaming and body mass. *Social Science & Medicine*, 1-9. Retrieved from https://doi.org/10.1016/j.socscimed.2019.05.030

McIlwraith, R., Jacobvitz, R. S., Kubey, R., & Alexander, A. (1991). Television Addiction: Theories and Data Behind the Ubiquitous Metaphor. *American Behavioral Scientist*, 104-121.

Milmo, D. (2021, October 28). *Enter the metaverse: the digital future Mark Zuckerberg is steering us toward*. Retrieved from The Guardian: https://www.theguardian.com/technology/2021/oct/28/facebook-mark-zuckerberg-meta-metaverse

Mitchell, K. A., & Beard, F. (2010). Measuring Internet Dependence Among College Students: A Replication and Confirmatory Analysis. *Southwestern Mass Communication Journal*, 15-28.

Morahan-Martin, J., & Schumacher, P. (2000). Incidence and Correlates of Pathological Internet Use Among College Students. *Computes in Human Behavior*, 13-29.

Morris, C. (2019, April 4). *"It's created to addict" Prince Harry calls for ban on Fortnite*. Retrieved from Yahoo! Finance: https://finance.yahoo.com/news/apos-apos-created-addict-apos-155840082.html

NACE. (2019). *About*. Retrieved from National Association of Collegiate Esports: https://nacesports.org/about/

Ng, B. D., & Wiemer-Hastings, P. (2005). Addiction to the Internet and Online Gaming. *CyberPsychology & Behavior*, 110-113.

Nielson, R. K., & Karhulahti, V. M. (2017, August). The Problematic Coexistence of "Internet Gaming Disorder" and Esports. *Proceedings of the 12th International Conference on the Foundations of Digital Games, Article 52*.

O'Conner, R. M., Stewart, S. H., & Watt, M. C. (2009). Distinguishing BAS risk for university students' drinking, smoking, and gambling behaviors. *Personality and Individual Differences*, 514-519.

Odaci, H., & Kalkan, M. (2010). Problematic Internet Use, Loneliness, and Dating Anxiety Among Young Adult University Students. *Computers & Education*, 1091-1097.

Park, B.-W., & Lee, K. C. (2011). Exploring the value of purchasing online game items. *Computers in Human Behavior*, 2178-2185.

Pearson, N., Braithwaite, R. E., Biddle, S. J., Sluiis, E. M., & Atkin, A. J. (2014). Associations between sedentary behaviour and physical activity in children and adolescents: A meta-analysis. *Obesity Reviews, 15*(8), 666-675. Retrieved from https://doi.org/10.1111/obr.12188

Peplau, L. A., Russell, D., & Heim, M. (1979). The Experience of loneliness. In I. Frieze, D. Bar-Tal, & J. S. Carroll, *New Approaches to Social Problems: Applications of Attribution Theory* (pp. 53-78). San Francisco, CA: Jossey-Bass.

Pizzo, A. D., Baaker, B. J., Sangwon, N., Lee, M. A., Kim, D., & Funk, D. C. (2018). Esports vs. Sport: A Comparison of Spectator Motives. *Sports Marketing Quarterly*, 108-123.

Potenza, M. N. (2014). Non-substance Addictive Behaviors in the Context of DSM-5. *Addictive Behaviors*, 1-2.

Prena, K., & Weaver, A. J. (2020). Grades on Games: Gaming Preferences and Weekly Studying on College GPAs. *Game Studies, 20*(4).

Przbylski, A. K., Murayama, K., DeHaan, C. R., & Gladwell, V. (2013). Motivational, emotional, and behavioral correlates of fear of missing out. *Computers in Human Behavior*, 1841-1848.

Rehbein, F., Kleim, S., Baier, D., Mößile, T., & Petry, N. M. (2015). Prevalence of internet gaming disorder in German adolescents: Diagnostic contribution of the nine DSM-5 criteria in a state-wide representative sample. *Addiction*, 842-851.

Samaha, M., & Hawi, N. S. (2016). Relationships Among Smartphone Addiction, Stress, Academic Performance, and Satisfaction With Life. *Computers in Human Behavior*, 321-325.

Seo, Y., & Jung, S. U. (2016). Beyond Solitary Play in Computer Games: The Social Practices of Esports. *Journal of Consumer Culture*, 635-655.

Song, I., Larose, R., Eastin, M. S., & Lin, C. A. (2004). Internet Gratifications and Internet Addiction: On the Uses and Abuses of New Media. *CyberPsychology & Behavior*, 384-394.

Stevens, C., Zhang, E., Cherkerzian, S., Chen, J. A., & Liu, C. H. (2020). Problematic Internet use/computer gaming among US college students: Prevalence and correlates with mental health symptoms. *Depression and Anxiety, 37*(11), 1127-1136.

Sussman, S., & Moran, M. B. (2013). Hidden Addiction: Television. *Journal of Behavioral Addictions*, 125-132.

Tejeiro Salguero, R. A., & Bersabe Moran, R. M. (2002). Measuring Problem Bideo Game Playing in Adolescents. *Society for the Study of Addiction to Alcohol and Other Drugs*, 1601-1606.

Turel, O. (2020). Videogames and guns in adolescents: Tests of a bipartite theory. *Computers in Human Behavior, 109*, 1-8. Retrieved from https://doi.org/10.1016/j.chb.2020.106355

Van Rooij, A. J., Meerkerk, G.-J., Schoenmakers, T. M., Griffiths, M., & Van De Mheen, D. (2010). Video Game Addiction and Social Responsibility. *Addiction Research and Theory*, 489-493.

Van Rooij, A. J., Schoenmakers, T. M., Vermulst, A. A., Van den Eijnden, R. J., & Van de Mheen, D. (2010). Online Video Game Addiction: Identification of Addicted Adolescent Gamers. *Addiction*, 205-212.

Wan, C.-S., & Chiou, W.-B. (2006). Psychological Motives and Online Games Addiction: A Test of Flow Theory and Humanistic Needs Theory for Taiwanese Adolescents. *CyberPsychology & Behavior*, 317-324.

Wan, C.-S., & Chiou, W.-B. (2007). Why Are Adolescents Addicted to Online Gaming? An Interview Study in Taiwan. *CyberPsychology & Behavior*.

Weinstein, A. M. (2010). Computer and Video Game Addiction - A Comparison between Game Users and Non-Game Users. *The American Journal of Drug and Alcohol Abuse*, 268-276.

Weiss, T. (2011). Fulfilling The Needs of Esports Consumers: A Uses and Gratifications Perspective. *BLED 2011 Proceedings*, 572-578.

WHO. (2022, February 11). *WHO's new International Classification of Diseases (ICD-11) comes into effect*. Retrieved from World Health Organization: https://www.who.int/news/item/11-02-2022-who-s-new-international-classification-of-diseases-(icd-11)-comes-into-effect

Yee, N. (2001). *The Norrathian scrolls: A study of EverQuest.* Retrieved from Nick Yee's HomePage: http://www.nickyee.com/report.pdf

Yee, N. (2009). Befriending ogres and wood-elves: Relationship formation and the social architecture of Norrath. *Game Studies*. Retrieved from http://gamestudies.org/0901/articles/yee

Young, K. S. (2004). Internet addiction: A new clinical phenomenon and its consequences. *American Behavioral Scientist, 48*(4), 402-415.

Young, K. S., & Rodgers, R. (1998). The Relationship Between Depression and Internet Addiction. *CyberPsychology*, 25-28.

Young, K. S., & Rogers, R. C. (1998). The relationship between depression and pathological internet use. *CyberPsychology & Behavior*, 25-28.

Funding and Acknowledgements

The authors declare no funding sources or conflicts of interest.

About the Author(s)

Glenn A Flansburg and **Ahmed Shatil Alam** are Ph.D. students at the Gaylord College of Journalism and Mass Communication, University of Oklahoma.

Umer Bilal is an M.A. student at the Gaylord College of Journalism and Mass Communication, University of Oklahoma.

Online Connections

To follow these authors in social media:

Glenn A Flansburg: https://www.linkedin.com/in/gflansburg
Ahmed Shatil Alam: https://www.linkedin.com/in/ahmed-shatil-alam/
Umer Bilal: https://twitter.com/umerbilalawan