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PERSONALITY TRAITS RELATED TO PROBLEMATIC FACEBOOK

USE

by

Shelley R. Visconte, MA

A Dissertation Presented in Partial Fulfillment
Of the Requirements for the Degree
Doctor of Philosophy

COLLEGE OF EDUCATION
LOUISIANA TECH UNIVERSITY

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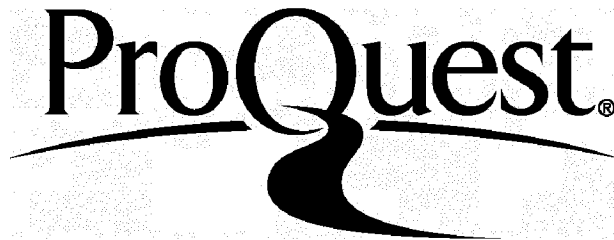
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We hereby recommend that the dissertation prepared under our supervision
by Shelley R. Visconte

entitled Personality Traits Related to Problematic Facebook Use

be accepted in partial fulfillment of the requirements for the Degree of
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ABSTRACT

The American Psychiatric Association (APA) encouraged research in the area of Internet Gaming Disorder, by including it in the Conditions for Further Study section of the *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition* (DSM-5; APA, 2013). The present study attempted to determine which personality traits were associated with problematic Facebook use, a subset of problematic Internet use. The Bergen Facebook Addiction Scale (BFAS), Narcissistic Personality Inventory-Sixteen (NPI-16), International Personality Item Pool (IPIP) items related to extraversion, IPIP items related to neuroticism, Internet Addiction Test (IAT), Facebook Intensity Scale (FBI), a demographic information form, and Exploratory Facebook Use Questionnaire were used to determine if specific personality traits were associated with problematic Facebook use.

Participants were 295 Facebook users, recruited through social media. Participants reported more Facebook friends and the average participant age was over a decade older than in prior studies. The average number of hours spent on Facebook per day was similar to previous research.

Females reported having significantly more Facebook friends and yielded significantly lower scores on personality measures than males. On the three measures of problematic Facebook use, results were mixed. Females produced lower scores than males on two measures and higher scores on a third measure. Additionally, results suggest narcissism, extraversion, and neuroticism predict problematic Facebook use in males, but not females.

Higher levels of narcissism and extroversion were found to be associated with higher scores on measures of problematic Facebook use. Additionally, neuroticism and extraversion were significant positive predictors of problematic Facebook use. Positive endorsement of Exploratory Facebook Use Questions was associated with higher scores on two measures of problematic Facebook use. Lastly, participants with higher problematic Internet use also reported higher levels of problematic Facebook use. Continued research is needed to understand better the full nature of problematic Internet and/or subsets (i.e., problematic Facebook use).

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Author Shelby R. Visser

Date 5/20/16

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CHAPTER ONE

INTRODUCTION

Since being made available to the general public during the 1990s, the Internet has become a ubiquitous and integral part of everyday life (Weiser, 2001). Between 1999 and 2013, the number of Internet users worldwide increased ten-fold (Internet Live Stats, 2015). In 2010, the Internet was estimated to have two billion users worldwide (Internet Live Stats, 2015). In four years, that number grew by one billion, with the Internet having an estimated three billion worldwide users (Smith, 2014). In 2013, researchers found that 73% of adults were active on a social networking site (Duggan & Smith, 2013). Although Facebook is currently the dominant social networking site, users are diversifying to other social networking sites, with 42% being active on multiple social networking sites (Duggan & Smith, 2013). Given these continual changes, one goal of this study is to update what is currently known about Internet and Facebook use and the psychological traits of its users.

Given the ever-increasing number of Internet users, the potential addictive nature of the Internet continues to attract the interest of those within the general public and psychologists (Eugenia, Hugo, & Wong, 2013; Hargittai & Hsieh, 2010). The authors of the *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5)* identified Internet Gaming Disorder, also referred to as Internet Use Disorder and Internet Addiction, as being a significant public health concern (American Psychiatric Association [APA], 2013). Due to controversy and disagreement regarding the validity of

the construct of behavioral addictions, such as Internet Addiction (Leung, 2004; Marks, 1990; Tsai et al., 2009), the author of the present study will, for the most part, refer to Internet Addiction as problematic Internet use.

There is some disagreement regarding how to conceptualize problematic Internet use; however, commonly cited indicators of problematic use found in the literature include development of tolerance, excessive time spent on the Internet, distress, irritability, spending more time on the Internet than planned, giving up important activities (e.g., social, occupational, recreational) to spend time on the Internet, continued use regardless of it causing problems in major life areas (e.g., work, school, relationships), unsuccessful attempts to cut down on use, and withdrawal (Beard & Wolf, 2001; Griffiths, 1998; Panayides & Walker, 2012; Young & Rodgers, 1998b).

Research has found that some Facebook users report behaviors and symptoms similar to those of problematic Internet users. Thompson and Loughheed (2012) found that problematic Facebook users reported feeling anxious when unable to access Facebook, feeling addicted to Facebook, wishing they did not feel the need to be on Facebook, losing sleep over Facebook, spending more time than intended on Facebook, and feeling out of touch when they did not have access to Facebook. There are apparent similarities between problematic Internet use and problematic Facebook use. However, the unique communicative opportunities (e.g., status updates, chatting, share photos, create timelines) provided by social networking sites, such as Facebook, set problematic Facebook use apart as a subset of problematic Internet use, also worthy of study.

The APA has encouraged research in the area of problematic Internet use by including Internet Gaming Disorder in the Conditions for Further Study section of the

DSM-5. The DSM-5 authors and other researchers state that continued research will provide greater understanding and ultimately better inform decisions about whether Internet Gaming Disorder/Internet Addiction has merit as a disorder for placement in forthcoming editions of the DSM (APA, 2013; Pies, 2009). Little data has been gathered in this area even since publication of the DSM-5. The current study does as the authors of the DSM-5 suggested and adds to existing problematic Internet use research.

Growing research suggests that individuals with problematic Internet use are at significant risk for psychological, economic, relational, and medical problems and may benefit from professional care and treatment (Aboujaoude, Doran, Gamel, Large, & Serpe, 2006; Pies, 2009). Additionally, specific personality traits are associated with the outcome of therapeutic interventions and individual differences in personality can play an important role in the choice of treatment options. Some personality traits, including neuroticism and extraversion, are considered a risk factor for engaging in problematic behavior, such as problematic Internet use (Ahmad, 2011; Hardie & Tee, 2007; Paulhus, 1998). Although the DSM-5 states that no specific personality traits have been consistently linked to problematic Internet use (APA, 2013), more recent research links some personality traits with general Facebook use (Yesil, 2014); however, the personality traits associated with problematic use have not been identified. Therefore, a central focus of this study is to identify personality traits associated with problematic Facebook use. With identification of personality traits associated with problematic Internet and Facebook use, therapeutic interventions can be tailored to better fit the client's individual needs. Additionally, expanding our understanding of personality traits associated with

problematic Facebook use may inform future prevention policies and guide the development of subsequent diagnostic criteria and intervention strategies.

The Origins of the Internet, Social Media, and Facebook

In 1958, the Semi-Automatic Ground Environment control system built the world's largest computer, covering half an acre (Sun et al., 2009). In 1971, email was created and the earliest reports of excessive use of what was to become the Internet were noted by researchers (Sun et al., 2009). In 1987 spam, unsolicited emails sent to a large number of addresses, made its first inbox appearance and in 1989 dial-up Internet access with a telephone connection was made available to the public (Boyd & Hargittai, 2010; Gribbin, 2011).

In the 1990s, during the early days of the Internet, although open to the public, the primary users of the Internet were a small group of researchers and academics (Schoenfeld, 2011). Over the next few years, the Internet rapidly moved from scientific use to that of broader society. Reports of problematic Internet use began to appear in the medical and psychological literature; however, in 1995, the National Science Foundation Networking was decommissioned and the Internet was opened to commercial traffic (Chakraborty, Grover, & Basu, 2010; Gribbin, 2011).

In 1997, the first social networking site, SixDegrees.com, was launched, which allowed users to create profiles, list, and surf for friends (Boyd & Ellison, 2007). In 2003, MySpace began and was the first widely used social networking site (International Business Times, 2013). A year later, Facebook was founded and served as a social networking site for students attending Harvard (Facebook, 2011b). In 2009, Facebook reached 100 million active users and in 2010, Facebook overtook MySpace to become the

Internet's most popular social networking site (Goodmon, Smith, Ivancevich, & Lundberg, 2014; International Business Times, 2013). Today, Facebook is the most used social networking site, with 57% of American adults and 73% of American adolescents age 12 to 17 years old having a Facebook page (Internet Live Stats, 2015). The frequency of use is also increasing, with 51% of users reporting daily use in 2010 and 64% reporting daily use in 2014 (Smith, 2014).

Social media technologies take on many different forms, and the boundaries between the different types of social media have increasingly become blurred. To help delineate between the different types of social media Kaplan and Haenlein (2010) created a classification system. They identified seven different social media categories, including (a) social networking sites (e.g., Facebook), (b) collaborative projects (e.g., Wikipedia), (c) blogs and microblogs (e.g., Twitter), (d) social news networking sites (e.g., Leakernet), (e) content communities (such as YouTube), (f) virtual game worlds (e.g., World of Warcraft), and (g) virtual social worlds (e.g., Second Life) (Kaplan & Haenlein, 2010).

Facebook stands out in the variety it offers users. Facebook users can provide and gain social support; chronicle life, community, and world events; share memories; learn and explore new things; advertise themselves; promote the products and causes they believe in; provide and gain political support; and become content creators (Chan, Cherry, Shi, & Lee, 2015; Indian & Grieve, 2014; Raacke & Bonds-Raacke, 2008; VanDam & VanDeVelden, 2015). Additionally, as Eski (2012) points out, Facebook use requires minimal effort. Users can easily, and from almost anywhere, feel understood,

compare themselves to others, share, gain a forum for their self-image, satisfy voyeuristic curiosity, cure boredom, and feel as if they are a part of something bigger.

Problematic Use of Technology

Each significant technological development fundamentally reforms society (Kandell, 1998). Just as the invention of the electric light bulb enabled a multitude of nocturnal activities to occur, the Internet spawned a revolution in communication, commerce, and behavior (Warden, Phillips, & Ogloff, 2004). The introduction of new technology has frequently been accompanied by concern about possible detrimental effects and the potential for addiction (McIlwraith, Jacobvitz, Kubey, & Alexander, 1991; Pratarelli, Browne, & Johnson, 1999; Schallow & McIlwraith, 1986; Smith, 1981; Stern, 1999).

Since movies in the 1920s, radio in the 1930s, and television in the 1940s and 1950s, technology has been criticized as negatively affecting behavior (Ward & Wackman, 1971). Technological addictions have been identified as a subset of a broader category of non-chemical addictions involving human-machine interaction, and can be either passive (e.g., television) or active (e.g., computer games). The reinforcing features such as sound effects may contribute to the addictiveness of technologies (Buss & Craik, 1986; Griffiths, 1999; Han et al., 2011; Kubey & Csikszentmihalyi, 2002; VanGelder, 2003). Kraut et al. (1998) noted decades of research indicating that watching television reduced social involvement, physical activity, mental health, boredom, and unhappiness. Essentially, technology has both a positive and negative side. Typically, negative consequences come from excessive frequency of use to the exclusion of other life needs (Kraut et al., 1998).

Problematic Internet Use

In 1998, Kandell defined problematic Internet use as involving a psychological dependence (an emotional need with no underlying physical need) on the Internet, regardless of the activity the user engages in while online. Other researchers have suggested that problematic Internet use be defined as uncontrollable or poorly controlled urges, preoccupation regarding Internet use, and access that leads to impairment or marked distress, resulting in psychological, academic, social, relational, occupational, or financial difficulties (Panayides & Walker, 2012). Others based their definition on the *Diagnostic and Statistic Manual of Mental Disorders*, 4th Edition, Text Revised (DSM-IV-TR) criteria for pathological gambling (Beard & Wolf, 2001; Chakraborty et al., 2010; Ferarro, Caci, D'Amico, & Di Blasi, 2007; Gribbin, 2011; Kandell, 1998; Shaffer, 1996; Shapira, Goldsmith, Keck, Khosla, & McElroy, 2000).

Description. Many attempts have been made to appropriately coin a name that accurately labels problematic Internet use (Goldberg, 1996; VanGelder, 2003; Young, 1996). In 1996, Griffiths described technological addiction, a non-chemical-behavioral addiction involving human-machine interaction. Also in 1996, Goldberg introduced the term Internet addiction disorder and Young (1996) referred to problematic Internet use as pathological Internet use. A year later, Scherer and Bost (1997) first publically used the term Internet behavior dependence and in 2001, Davis referred to problematic Internet use as specific or generalized pathological Internet use. Other terms include: compulsive Internet use, computer addiction, Internetomania, and computer mediated communication addiction (DeAndrea, Tong, & Walther, 2011; Murray, 1996; Shapira et al., 2003; Widyanto & Griffiths, 2006; Young, 1998a). Although each of these terms reflects a

slightly different understanding of the nature of problematic Internet use, and despite the lack of agreement regarding terminology, common indicator of a potential disorder can be found in the literature, such as: excessive time spent on the Internet, distress, irritability, and the need to spend more time on the Internet to the exclusion of important life needs (Beard & Wolf, 2001; Panayides & Walker, 2012; Young & Rodgers, 1998b). For the purposes of this study, the author has chosen these common indicators to define problematic Facebook use.

Risk factors. Problematic Internet use has been observed within almost every age group, gender, culture, and personality type (Young, 1998b). Additionally, problematic Internet use has been reported across many nations and cultures (Bakken, Wenzel, Gotestam, Johansson, & Oren, 2009; Cao, Su, Liu, & Gao, 2007), but several groups appear to be vulnerable to developing problematic Internet use (Nie & Erbring, 2002). Typically, these groups are identified based on demographic criteria, personality traits, and psychopathology (Czincz & Hechanova, 2009; Nalwa & Anand, 2003; Widyanto & McMurrin, 2004). Risk factors for problematic Internet use include age, age of first Internet exposure, frequency of Internet use, accessing the Internet for gaming, social factors, Internet access, gender, level of education, and financial difficulties (Hall & Parsons, 2001; Kratzer & Hegerl, 2008; Park et al., 2010; Tsitsika et al., 2009).

Due to neurobiological factors, psychological maturation, and social factors, adolescents are particularly vulnerable to problematic Internet use (Fu, Chan, Wong, & Yip, 2010; Huang et al., 2010; Jang, Hwang, & Choi, 2008; Kaltiala-Heino, Lintonen, & Rimpela, 2004; Kesici & Sahin, 2010; Ko et al., 2008; Pallanti, Bernardi, & Quercioli, 2006; Xiuqin et al., 2010). Internet use is highest among 16 to 24 year olds (Kaltiala-

Heino et al., 2004; Kandell, 1998; Kirschner & Karpinski, 2010; Ko, Yen, Chen, Yeh, & Yen, 2009; Yen, Ko, Yen, Chang, & Cheng, 2009). Several studies have found that problematic Internet use tends to manifest itself during the late 20s or early 30s (Black, Belsare, & Schlosser, 1999; Shaw & Black, 2008; Young, Pistner, O'Mara, & Buchanan, 1999). In the United States (U.S.), an online survey found that 6% of those surveyed displayed problematic Internet use (Elliston et al., 2007), and a study of college students in the Southern U.S. found that approximately one-quarter engaged in problematic Internet use (Odaci & Kalkan, 2010).

Initially it was thought that problematic Internet use was most prevalent among young, computer savvy, introverted males (Ehrenberg, Juckes, White, & Walsh, 2008; Griffiths, 1997; Guan & Subrahmanyam, 2009; Toma & Hancock, 2011; Young, 1997; Young, 1998a). However, Young (2007) challenged an earlier finding by reporting that 61% of survey respondents engaging in problematic Internet use were women. It has been suggested that older people and women are drawn to the social interaction aspects of the Internet, while younger people and men tend to access interactive role playing games and pornography using the Internet (Kwon, Chung, & Lee, 2009; Mitchell, 2000).

Young (2007) suggests that employees working in companies with Internet availability comprise a group at high risk of developing problematic Internet use. This is claim is based on surveys completed by executives from the nation's top 1000 companies. Young (1999) found that 55% of employees at work spent time surfing the Internet, neglecting work duties (Young, 1999).

Onset. Rapidity of onset of problematic use was reported by Young (2007), who found that 25% of survey respondents felt addicted to using the Internet within their first

six months online, 58% considered themselves addicted within one year, and 17% reported feeling addicted after more than one year online (Young, 2007). Similarly, Thompson and Loughheed (2012) found that 72% of participants felt addicted, 33% reported experiencing negative consequences due to their Internet usage, and some admitted to trying to cut down on their Internet use but failed despite the significant problems their use caused.

Neurological and genetic research. Neuroimaging research suggests that subjects engaging in problematic Internet use have multiple structural changes in their brains, and these changes correlate significantly with the duration of their problematic Internet use (Lu, Wang, & Huang, 2010; Yuan et al., 2011). Resting-state functional magnetic resonance imaging (fMRI) studies showed that college students engaging in problematic Internet use had increased regional homogeneity in several brain regions including the cerebellum, brainstem, limbic lobe, frontal lobe, and occipital lobe, when compared to non-problematic Internet using students (Amato & Fowler, 2002; Fortson, Scotti, Chen, Malone, & Del Ben, 2007; Liu et al., 2010). Additionally, genetic variations in the serotonin transporter gene have been found in problematic Internet users (Lee & Ashton, 2005; Lin et al., 2012; Zhou, 2012). In 2011, Zhou and colleagues found that adolescent engaging in problematic Internet use had lower grey matter density in the left anterior cingulate cortex, left posterior cingulate cortex, left insula, and left lingual gyrus (Zhou et al., 2011). This research highlights the neurological and genetic differences that appear to exist in problematic users.

Association with other disorders. Problematic Internet use is also often associated with a wide range of DSM-IV-TR Axis I and Axis II disorders (APA, 2000;

Cheng & Li, 2014). Patients in treatment for problematic Internet use are commonly found to meet DSM-IV-TR criteria for diagnoses such as depression, social phobia, impulse control disorder, attention deficit-hyperactivity disorder, schizoid personality disorder, bipolar disorder, substance abuse, and other addictive disorders (Cromie, 1999; Dong, Lu, Zhou, & Zhao, 2010; Egger & Rauterberg, 1996; Griffiths, 2000; Mitchell, 2000; Yen, Ko, Yen, Wu, & Yang, 2007). Similarly, Bai, Lin, and Chen (2001) found that of participants recruited from a clinic treating problematic Internet use, 60% had a clinical history of anxiety, depression, or substance abuse. Young (1998a) found that, of participants who met criteria for Internet addiction, 54% had a history of depression, 34% had a history of an anxiety disorder, and 52% had a clinical history of problems with alcoholism, drug dependency, compulsive gambling, or chronic overeating. Additionally, several participants were in professional treatment for these disorders and/or taking medication (Young, 1998a).

Black et al. (1999) found that 24% of their participants who engaged in problematic Internet use met criteria for a mood disorder, 19% for an anxiety disorder, 14% for a substance abuse disorder, and 10% for psychosis. Young and Rodgers (1998b) found that participants engaging in problematic Internet use had moderate to severe levels of depression compared to the normal population. Young (1998b) found that participants engaging in problematic Internet use tend to not only be depressed, but are also often lonely, insecure, anxious, and possess low self-esteem. Shapira et al. (2000) reported that 70% of their participants who engaged in problematic Internet use met criteria for bipolar disorder, 20% for compulsive shopping, 10% for intermittent explosive disorder, 5% for each kleptomania and pathological gambling. Research has found that 15% of

participants who engaged in problematic Internet use met criteria for generalized anxiety disorder, 15% for social anxiety, 14% for attention-deficit/hyperactivity disorder, 14% for borderline personality disorder, 7% for hypomania, 7% for dysthymia, 7% for obsessive compulsive personality disorder, and 7% for avoidant personality disorder (Bernardi & Pallanti, 2009; Chakraborty et al., 2010; DeBerardis et al., 2009).

Researchers also found that subjects engaging in problematic Internet use experience more dissociative symptoms (Bai et al., 2001; DeBerardis et al., 2009; Mitchell, 2000).

Regarding DSM-IV-TR Axis II disorders, 52% of subjects who engaged in problematic Internet use met criteria for at least one personality disorder, most frequently borderline, antisocial, or narcissistic disorders (Black et al., 1999; Chakraborty et al., 2010; Miller et al., 2010). More recently, the DSM-5 authors state there is some evidence that Attention-Deficit/Hyperactivity Disorder and Obsessive-Compulsive Disorder may be associated with problematic Internet use (APA, 2013).

An addition to the DSM-5, not present in prior editions, was the inclusion of Internet Gaming Disorder, also referred to as Internet Use Disorder and Internet Addiction, in the Conditions for Further Study section (APA, 2013). It has been suggested that additional research is needed to better understand problematic Internet use and to determine if it warrants DSM diagnostic inclusion (Pies, 2009).

Predictors. Problematic Internet use tends to involve specific applications including gaming and social networking (Bradley & Emmons, 1992; Fogel & Nehmad, 2009; France, 2009; Hampton, Goulet, Rainie, & Purcell, 2011; Kesici & Sahin, 2009; Vanden, Meerkerk, Vermulst, Spikerman, & Engels, 2008). Most frequently, problematic Internet use occurs in the context of interactive online applications, such as Facebook,

and is likely due to the personality traits of users (Czincz & Hechanova, 2009; Fioravanti, Dettore, & Casale, 2012). Research suggests that self-reported personality traits, such as neuroticism, are good predictors of usage of social networking sites (Amichai-Hamberger & Vinitzky, 2010; Correa, Hinsley, & de Zuniga, 2010; Gosling, Augustine, Vazire, Holtzman, & Gaddis, 2011; Karaiskos, Tzavellas, Balta, & Paparrigopoulos, 2010; Kramer & Winter, 2008). Neuroticism and poor social skills seem to relate to each other in a cyclical manner; that is, people with neuroticism and poor social skills have a preference for online social interaction, which contributes to problematic usage, and therefore, continued poor social skills from lack of interpersonal interaction (Beard, 2002; Fioravanti et al., 2012; Hart, Nailing, Bizeer, & Collins, 2015; Kenny, 1994; Munteanu, Costea, Palos, & Jinaru, 2009; O'Reilly, 1996).

Problematic Online Gaming

Online gaming can be extremely addictive because of its interactive nature (Griffiths & Parke, 2010; Ko, Liu, Hsiao et al., 2009; Thatcher & Goolam, 2005). Online games include stimulating visual and auditory effects, rapid event changes, exchange of messages between gamers, ability to change between observer and participant roles, and virtual immersion into a variety of environments that encourage active engagement (Griffiths, 1998; Johansson & Gotestam, 2004; Lin & Wu, 2009; Liu & Kuo, 2007; Rheingold, 1993). Problematic online gaming typically includes a desire to devote progressively longer periods of time to gaming, experience more euphoric feelings when gaming, and entail cognitive fixation on gaming (Maheu, 2002; Massing, 2000). Researchers have also found that problematic online gamers frequently exhibit traits of

addiction, including tolerance, euphoria, and cognitive salience (Miller & Campbell, 2008).

Online gamers cite formation of social relationships and the ability to build characters as the main reasons they enjoy online gaming (Klimmt, Schmid, & Orthmann, 2009; Weinstein, 2010). According to Weinstein (2010), problematic online gamers “play compulsively, isolating themselves from other forms of social contact, and focus almost entirely on in-game achievements rather than broader life events” (p. 1). As is the case with problematic Internet use, problematic online gaming has been associated with attention deficit hyper activity disorder, mania, and obsessive-compulsive disorder (Ha et al., 2007; Lee et al., 2008; Yoo et al., 2004). Children and teenagers who engage in problematic online gaming frequently display increased sensation seeking, boredom, and confusion between reality and illusion (Massing, 2000).

Problematic online gaming disrupts children’s learning, socialization, mental development, and lowers achievement (Griffiths, 1995; Ha et al., 2006). Adolescents who play online spend significantly more time gaming than do adolescents who play off-line computer games (Chiu, Lee, & Huang, 2004; Jelicic, Bobek, Phelps, Lerner, & Lerner, 2007; Ko, Yen, Chen, Chen, & Yen, 2005). College students engaging in problematic online gaming report that gaming often takes precedence over spending time with friends and family and lowers the time they allocate to homework (Frangos, Frangos, & Kiohos, 2010; Griffiths, 2010; Lavin, Marvin, McLarney, Nola, & Scott, 1999; Lin & Tsai, 2002; Liu & Kuo, 2007; Scherer, 1997; Yen, Ko, Yen, Chang, & Cheng, 2009).

Problematic Social Networking

Social networking sites, email, instant messaging, video- and photo- sharing sites and blogs are all tools that help people to communicate and socialize (Menon, Sharma, Chandra, & Thennarsu, 2014; Mooney, 2009). However, researchers suggest that social networking site users run the risk of becoming isolated and addicted to virtual relationships because they reduce face-to-face contact (Das & Sahoo, 2011). In contrast, research also suggests that social networking can be beneficial to older users (Nef, Ganea, Muri, & Mosimann, 2013). One study looked into these benefits for older adults and found that the most helpful quality of social networking was connecting with younger generations of family members. Utilizing social networking sites can help overcome problems with impaired mobility and long distances between families (Nef et al., 2013). However, potential obstacles for older adults include privacy concerns and difficulty using a computer (Shotton, 1991).

Facebook provides young adults and teens with a way to easily, quickly, and frequently interact with each other and express themselves (Toma & Hancock, 2013; Yesil, 2014). Almost 75% of teens and young adults are members of at least one social networking site (Thompson & Loughheed, 2012). Research suggests that problematic social networking sites used among teens and young adults can lead to negative consequences such as decreased face-to-face communication, worsening of academic performance (Paradise & Sullivan, 2012; Skiera, Hinz, & Spann, 2015; Yesil, 2014), time spent with family, and relationship problems (Kuss & Griffiths, 2011; Lee & Cheung, 2014; Milani, Osualdella, & Di Blasio, 2009; Poe & Courter, 1997).

Research has found a negative correlation between social media use and close interpersonal relationship satisfaction (Porter, Mitchell, Grace, Shinosky, & Gordon, 2012). Das and Shoo (2011) stated, a “lack of face-to-face contact could alter the way genes work, upset immune responses, hormonal levels, function of arteries and influence mental performance. This could increase the risk of health problems like cancer, strokes, heart disease and dementia” (p. 224). Additionally, Das and Shoo (2011) reported “233 million hours are lost every month as a result of employees wasting time on social networking sites” (p. 224). Similarly, in the United Kingdom, the Portsmouth City Council found that its employees collectively waste 71 working days a year on social networking sites (Kisiel, 2009). In the U.S., it is estimated that Internet misuse costs companies \$178 billion in lost productivity per year (Culter, 2005) and Facebook misuse cost companies \$28 billion in lost productivity per year (Plumer, 2013).

Gender

Males most frequently use the Internet for entertainment, leisure, and functional purposes and females most frequently use the Internet for interpersonal purposes (Choi & Kim, 2014; Luarn, Kuo, Chiu, & Chang, 2015; Weiser, 2000). While on-line, males are more likely to search for information, discover new friends, and play games. However, females are more likely to exchange messages, communicate with family and friends they already know, and compare themselves to others (Choi & Kim, 2014; Haferkamp, Eimler, Papadakis, & Kruck, 2012; Kuo, Tseng, Tseng, & Lin, 2013; Tufekci, 2008; Zhou, 2012).

Research on gender differences related to behavioral addictions, such as pathological gambling and video-game use, consistently shows that males demonstrate

greater levels of problematic use than females (Mentzoni et al., 2011; Molde, Pallesen, Bartone, Hystad, & Johnsen, 2009). This does not appear to be the case regarding social media use. Females use social networking sites more frequently than males (Hoy & Milne, 2010) and exceed males regarding the time spent on social media (Hoffman, 2008; Thompson & Lougheed, 2012).

In their 2010 study, Hoy and Milne found that females reported spending 62% of their Internet time on Facebook, compared to 44% for males. Compared to males, females show higher participation rates and frequency of interaction on Facebook (e.g., to “like” or comment on messages; Kalampokis, Tambouris, & Tarabanis, 2013; Luarn et al., 2015), suggesting Facebook is a part of everyday life for females (Thompson & Lougheed, 2012). This is likely because females tend to place a higher priority on interpersonal communication (Luarn et al., 2015) and attend to relationship related information on Facebook (Magnuson & Dundes, 2008; Muise, Christofides, & Desmaris, 2013).

Compared to males, females spend more time managing their Facebook profiles (Muise et al., 2013; Stefanone, Lackstaff, & Rosen, 2011). Thompson and Lougheed (2012) found that, on average, females spent 24 minutes a day examining others’ Facebook profiles, while males spent an average of 10 minutes. They also found that females were more likely to report that Facebook causes stress, feeling anxious or upset if they could not access Facebook, feeling addicted to Facebook, wishing they did not feel the need to be on Facebook, losing sleep over Facebook, spending more time than intended on Facebook, and feeling out of touch when they do not have access to Facebook (Thompson & Lougheed, 2012).

Other Countries

The United States is not alone in experiencing the growing phenomenon of problematic Internet use. Researchers have found problematic Internet use rates internationally that range from 1.5% to 24% (Petersen, Weymann, Schelb, Thiel, & Thomasius, 2009). In Germany, an estimated 3% of the population is believed to engage in problematic Internet use (Woelfling, Buhler, Lemenager, Mairsen, & Mann, 2009). In Italy, the rate of problematic Internet use among adolescents is approximately 5%; in China, approximately 10%; in Greece, approximately 12%; and in South Korea, approximately 16% (Ko, Liu, Hsiao et al., 2009; Lam, Peng, Mai, & Jing, 2009; Seo, Kang, & Yom, 2009; Tsitsika et al., 2009). In Britain, the prevalence rate of problematic Internet use among college students is slightly over 18%, and in Taiwan, the rate is almost 18% (Neimz, Griffiths, & Banyard, 2005; Tsai & Lin, 2003). China is also concerned about problematic Internet use (Campbell & Foster, 2002; Choi & Ross, 2006; Pies, 2008, 2009). Data from China reveals prevalence rates so high it was the first country to label problematic Internet use a clinical disorder (Block, 2008; Campbell, 1999; Hur, 2006; Ni, Yan, Chen, & Liu, 2009; Shlam & Medalia, 2014). In 2007, China established laws specifically restricting online gaming to no more than three hours daily (Block, 2008). In South Korea, almost 24% of children diagnosed with problematic Internet use required hospitalization (Ahn, 2007).

Behavioral Addiction

There is skepticism among some psychologists regarding the validity of the construct of behavioral addictions, such as Internet addiction (Ghassemzadeh, Shahraray, & Moradi, 2008; Leung, 2004; Tsai et al., 2009). They are of the opinion that the term

addiction should be reserved for drugs known to create dependency (Marks, 1990). However, in the last two decades, psychologists and addiction counselors have acknowledged that people can form addictions to more than chemical substances. They point to the addictive and habitual behaviors related to compulsive gambling, chronic overeating, sexual compulsions, and obsessive television watching (Young, 1998c). Additionally, there has been broad acceptance of pathological gambling as an addiction, which has created a precedent for acceptance of other problematic behavioral addictions, such as problematic Internet and Facebook use (Griffiths, 2000; Holden, 1997; Young, 1999).

Although Gambling Disorder is the only behavioral addiction included in the DSM-5 (APA, 2013), research is increasingly being conducted on other potential behavioral addictions, such as video-game, television, exercise, mobile-phone, online sex, shopping, work, Facebook, and Internet use (Adams & Kirkby, 2002; Andreassen et al., 2010; Beard, 2005; Choliz, 2010; Clark & Calleja, 2008; Fisher, 1994; Griffiths, 2012; Simkova & Cincera, 2004; Young, 1996). Widyanto and Griffiths (2006) proposed that problematic Internet use is a nonchemical and behavioral technological addiction. Problematic Internet use appears to be a relatively common behavioral addiction, the prevalence of which has been estimated to range from 1% to approximately 14% (Block, 2008; Kratzer & Hegerl, 2008; Levy & Strombeck, 2002; Park, Kim, & Cho, 2008; Tsitsika, et al., 2009; Widyanto & Griffiths, 2006). Some researchers consider behavioral addictions to be an impulse control disorder that occur when people find themselves unable to control the frequency or amount of a previously harmless behavior such as sex, gambling, work, shopping, or exercise (Grant, Brewer, & Potenza, 2006; Truer, Fabian,

& Furedi, 2001). Others consider behavioral addictions to be a compulsion (Marks, 1990; VanGelder, 2003).

Beard and Wolf (2001) suggest that physical withdrawal separates problematic Internet use from chemical dependence. Therefore, they propose that the term problematic is more appropriate than addiction to describe problematic Internet use. Some researchers argue that behavioral addictions, such as problematic Facebook and Internet use, lack a physiological component (Beard & Wolf, 2001; Marks, 1990; Shapira et al., 2003; VanGelder, 2003). However, others highlight the similarity in the activation of reward pathways between substance and behavioral addictions (Schmitz, 2005). Recent research findings suggest that there is a possibility of experiencing habit-forming chemical reactions to non-chemical events as well as chemical substances. Researchers point to the presence of dopamine released into the nucleus accumbens during non-chemically induced excitement, producing the same effect as alcohol and other drugs (Bai et al., 2001; Blum et al., 2008; Mitchell, 2000; Young, 1998c). Further, a group of researchers from the University of Milan and Massachusetts Institute of Technology (MIT) monitored a group of participants' physical and neuronal reactions when they were perusing Facebook and found that they were in a state of psychophysiological arousal while accessing Facebook (Horn, 2012b). Although research strongly suggests that neurochemical mediators such as dopamine, opioid peptides, glutamate, and gamma-aminobutyric acid likely play an integral role in substance and behavioral addictions, no definitive conclusions can be reached at this time (Hou et al., 2012; Schmitz, 2005).

Pathological Addiction

Facebook is a part of everyday life for many people (Thompson & Loughheed, 2012). For some users, their Facebook use has become problematic. These problematic users report a variety of issues including feeling stressed, anxious, upset, addicted, fatigued, and out of touch (Thompson & Loughheed, 2012). Young (1996, 1998a), and Griffiths (2000) have suggested that all pathological addictions involve six core components. These components include salience, mood modification, tolerance, withdrawal, conflict, and relapse. With the emergence of users reporting distress related to their Facebook use, Andreassen, Torsheim, Brunborg, and Pallensen (2012) saw the need to measure and better define problematic Facebook use. Andreassen and colleagues (2012) chose the six core elements of addiction to define and measure problematic Facebook use. Later, Young (1998a) added progression, denial, and continued use despite negative consequences to this list of traits.

Salience

Salience occurs when an activity becomes the most important in the person's life, causing preoccupation. Restructuring time and other activities are common salience traits (Griffiths, 2000; Young, 1998a). Greenfield (1999) found that 93% of the respondent Internet users experience salience.

Mood Modification

Mood modification refers to the euphoria or excitement induced when dopamine is released in the nucleus accumbens area of the brain (Griffiths, 2000). Neurological research suggests that problematic Internet use may cause serious damage to the brain (Pelling & White, 2009). Neuroimaging found that problematic Internet use is associated

with dysfunctions in the dopaminergic brain systems (Pelling & White, 2009).

Additionally, this research suggests that problematic Internet use may share similar neurobiological abnormalities with other addictive disorders (Pelling & White, 2009).

Tolerance

Griffiths (2000) defined tolerance as the “process whereby increasing amounts of the particular activity are required to achieve the former effect” (p. 211). Young (1996) found that those engaging in problematic Internet use engaged in the activity nearly 8 times more than non-problematic users. Brenner (1997) found that 55% of Internet users have been told they spend too much time on the Internet. This phenomenon may be likened to tolerance levels, which develop among alcoholics who gradually increase their consumption of alcohol in order to achieve the desired effect. Tolerance levels in Internet use may also be seen as fear of missing out on something, driving users to marathon-length Internet sessions (Brenner, 1997; Young, 1996). Greenfield (1999) found evidence of tolerance in 58% of survey respondents in his study of problematic Internet use.

Withdrawal

Griffiths (2000) defined withdrawal as the “unpleasant feeling state and/or physical effect that occurs when a particular activity is discontinued or suddenly reduced” (p. 212). Bai et al. (2001) found participants engaging in problematic Internet use exhibited the typical withdrawal symptoms of nervousness, agitation, and aggression when not online. Brenner (1997) noticed withdrawal, finding that 28% of participants had difficulty stopping thoughts of being on the Internet if they were not logged on.

Conflict

Conflict is a common factor associated with addictions, whereby others, or the user is under stress resulting from engaging in the activity (Griffiths, 2000). Young (1996) found that those engaging in problematic Internet use experienced moderate to severe academic, relationship, financial, occupational, and physical issues (Young, 1996).

Relapse

Griffiths (2000) defined relapse as the “tendency for repeated reversion to earlier patterns of the particular activity to recur and for eventually the most extreme patterns typical of the height of the activity to be quickly restored after many years of abstinence or control” (p. 212). Relapse has also been characterized as one or more unsuccessful attempts to stop engaging in an activity, often leading to failure because the underlying problems perpetuating the problem have not been resolved (Hirschman, 1992). Young (1996) found that 46% of participants made unsuccessful attempts to reduce the time they spent online to avoid negative consequences. Brenner (1997) found that 22% of participants had tried to cut down their Internet use but were unable. Greenfield (1999) reported that 68% of participants experienced relapse and 79% felt restless when trying to cut back.

Denial of a Problem

Denial of a problem represents a subconscious feeling of stability and self-control. Despite external and observable cues that a problem exists (Young, 1997). Young (1997) points out that often therapists exacerbate denial by not taking seriously a person’s problem with excessive Internet use (Young, 1997).

Continued Use Despite Consequences

Continued use despite consequences is the final criterion for problematic Internet use. Young (1998a) reported that participants engaging in problematic Internet use were staying online for up to 10 or more hours at a time, despite the problems their habitual use was causing in their families, relationships, work, and school performance. Additionally, problematic Internet users reported serious relationship problems, lost jobs, or poor grades (Young, 1996, 1998a).

Young (2007) found that most problematic Internet users experienced fatigue. Brenner (1997) found that most problematic users reported getting less than four hours of sleep per night and experienced interference in role functioning including poor time management, sleep deprivation, missing meals, work issues, and social isolation. Other adverse consequences experienced by problematic Internet users include carpal tunnel syndrome, back strain, and eyestrain (Armstrong, Phillips, & Saling, 2000; Brenner, 1997; Brunborg et al., 2011; Young, Cooper, Griffiths-Shelley, O'Mara, & Buchanan, 2000).

Proposed Diagnostic Criteria

The criteria used to define problematic Internet use have been the subject of controversy since the earliest empirical research on this phenomenon was conducted (Young, 1998b, 1998c). The earliest diagnostic model for problematic Internet use was proposed by Young (1999), who modified the diagnostic criteria for pathological gambling from the DSM-IV-TR to describe problematic Internet use. Young (1999) identified five distinct subtypes based on the type of online activity: (a) cyber-sexual addiction, (b) cyber-relationship addiction, (c) net compulsions (addiction to on-line

gaming, gambling, or auction websites) (d) information overload, and (e) computer addiction.

Some researchers have suggested that problematic Internet use be diagnosed using the DSM-IV-TR criteria for “impulse disorder not otherwise specified” because it is a behavior that is difficult to control (Shapira et al., 2000). Impulse-Control Disorders generally involve an inability or failure to resist an impulse, drive, or temptation to engage in a behavior that is harmful to the person or others (Beard & Wolf, 2001). Typically, there is a feeling of increasing tension or arousal before engaging in the behavior and then pleasure, gratification, or relief after the behavior is completed (VanGelder, 2003). Due to overlapping criteria, researchers suggest that a model similar to pathological gambling is the most accurate and stringent diagnostic criteria for identifying problematic Internet use (Beard & Wolf, 2001; Tao et al., 2010). In the DSM-5, Pathological Gambling Disorder was renamed Gambling Disorder and was moved from the Impulse Control Disorders section to the substance related and Addictive Disorders section. This new categorization took place because of consistent evidence that some behavioral addictions, such as gambling addiction and possibly problematic Internet use, are characterized by similar activation of brain systems that are also present in substance related addictions (APA, 2013; Kim et al., 2011).

Some conceptualize Internet addiction as a compulsive or impulsive disorder, but others suggest diagnostic criteria based on those used for substance-based addiction disorders (Dell’Osso, Altamura, Allen, Marazziti, & Hollander, 2006). Some have suggested that Internet addiction be included as a V code, such as parent-child relational problems (Murali & George, 2007). This label would indicate that Internet addiction may

be an area of clinical concern encountered in clinical practice, but without reaching the threshold of a mental disorder (APA, 2013; Block, 2008). As early as 2009, Pies research suggested that Internet addiction was a common disorder that merited inclusion in DSM-5. The DSM-5 authors included Internet addiction in conditions for further study and advocates still encourage its inclusion in future DSM editions (Cho et al., 2014; Lehenbauer-Baum et al., 2015; Mythily, 2014).

Further complicating this matter, debate still exists regarding the underlying causes of addictive behavior, which makes defining and developing diagnostic criteria for problematic Internet use more challenging (Beard & Wolf, 2001; Cao et al., 2007; Neslihan & Sevim, 2005; VanGelder, 2003). In 1998, Griffiths developed seven criteria, based on current addiction diagnostic criteria. According to Griffiths, if five or more criteria are endorsed, then a diagnosis of problematic Internet use can be made. The criteria are: (a) tolerance development; (b) spending more time on the Internet than planned; (c) engaging in activities that allow more time to be spent online; (d) giving up social, occupational, or recreational activities to spend time on the Internet; (e) Internet use persisting regardless of causing or exacerbating problems with work, schooling, finances, or family; (f) unsuccessful attempts to cut down on Internet use; and (g) withdrawal symptom development (Griffiths, 1998).

Proposed Etiology

A variety of etiological models have been proposed of problematic Internet and Facebook use. These include: (a) learning theory, (b) recency model, (c) explanatory theory (d) reward-deficiency hypothesis, and (e) biopsychosocial perspective. Each is discussed below.

Learning Theory

Learning theory emphasizes the positive reinforcing effects of Internet use, which work on the principle of operant conditioning (Wallace, 1999). According to this theory, Internet use can induce feelings of well-being and euphoria in the user and is, therefore, a rewarding behavior (Young et al., 2000). Additionally, Facebook may be used by a shy or anxious person as a social alternative to anxiety-provoking situations, such as a face-to-face interaction, which tends to reinforce Internet use by avoidance conditioning (Chakraborty et al., 2010; Czincz & Hechanova, 2009; Ebeling-Witte, Frank, & Lester, 2007).

Recency Model

In 2000, Grohol proposed a model of problematic Internet use. This two-phase model defines problematic Internet use as being related to the recency of Internet exposure. The first phase is characterized by the obsession and enchantment experienced during initial exposure to the Internet. During the second phase the problematic user experiences disillusionment and avoids Internet use (Grohol, 2000).

Explanatory Theory

In 2003, Caplan developed an explanatory theory involving social skills deficits. He proposed that lonely and depressed individuals tend to have negative views of their social competence. Additionally, several features of communication via the Internet are appealing to people who see themselves in that manner, because communication via the Internet and Facebook gives people with negative self views greater control over self-presentation than face-to-face communication (Caplan, 2003).

Reward-Deficiency Hypothesis

This hypothesis suggests that people who achieve less satisfaction from natural rewards tend to turn to substances. This is to enhance the stimulation of reward pathways (Blum, Cull, & Comings, 1996; Doherty & Schlenker, 1991; Jones, 1981). This theory proposes that Internet use provides immediate reward, which mimics the effects of alcohol and drugs (Chakraborty et al., 2010; Massing, 2000).

Biopsychosocial Perspective

Behavioral addictions, such as problematic Internet and Facebook use, can also be viewed from a biopsychosocial perspective (Li & Chung, 2006; Panayides & Walker, 2012; Widyanto & Griffiths, 2006; Yang & Tung, 2007; Young, 1998b). This theory postulates that addiction results from a complex interaction between biological, psychological, social, and spiritual factors (British Columbia Ministry for Children and Families, 1996). Researchers suggest that this combination of factors also contribute to the etiology of behavioral addiction. This concept may also hold true for problematic Internet use (Ames et al., 2006; Griffiths, 2005; Shaffer et al., 2004).

Critics of Internet addiction as a DSM diagnosis argue that excessive use of the Internet is merely a secondary manifestation of a mood disorder, such as depression, or a personality disorder, such as Narcissistic Personality Disorder (Bleske-Rechek, Remiker, & Baker, 2008; Young & Rodgers, 1998a). They point out that the Internet is a communication medium, not a substance, like cocaine, or an intrinsically rewarding behavior, such as gambling (Pies, 2009). Whether one believes Internet addiction should be included in the DSM, there is ample research to suggest that Internet use can be problematic, is a growing problem, and can cause extreme suffering and even

incapacitation. Therefore, it is important that researchers agree on precise, research oriented criteria for Internet addiction so that more may be learned regarding this phenomenon (APA, 2013; Griffiths, 2005; Horn, 2012a). The present research is intended to advance understanding of the psychological basis of problematic Internet use; personality traits and disorders are a possible basis.

Problematic Facebook Use

Facebook has dramatically changed the way we use the Internet, express opinions, share content, and communicate with friends and family. Instead of emailing, many Facebook users message friends and family through Facebook. Clicking on “like” provides an expedited way to share your opinions with other Facebook users around the world (Brewer, 2014). Today, it’s not just individuals who have Facebook pages. Facebook has changed the way politicians interact with voters and businesses interact with customers (Wagner, 2014).

In the last decade, an explosive rise in the use of social networking sites has taken place, with Facebook at the forefront (Brewer, 2014; Wagner, 2014). According to Facebook’s fact sheet (2011a), Facebook serves as a social tool that helps users communicate efficiently with friends, family, and coworkers. Social networking sites, such as Facebook, have significantly impacted the world and provided many benefits to its users. Facebook provides a venue through which users can make new connections with people who have similar interests, maintain current connections, and renew old friendships (Facebook, 2011a).

Researchers have found that a variety of factors motivate people to use Facebook. Elliston et al. (2007) found that 96% of Facebook users include the name they used

during high school, suggesting that connecting with former classmates is a strong motivation for using Facebook. These researchers also found a link between on-line and off-line relationships, with participants reporting a primary motivation for using Facebook was to maintain and solidify existing off-line relationships (Elliston et al., 2007).

Access to a variety of social networking sites is growing. Griffiths (2012) argues that the activities one can engage in while on Facebook have become so diverse that it no longer entails only social networking. Besides sending messages and posting pictures, Facebook users can now play online games, gamble, and watch videos (Griffiths, 2012; King, Delfabbro, & Griffiths, 2010; Kuss & Griffiths, 2011).

A review of the literature conducted by Srivastava and Bhardwaj (2014) revealed that some people have become so preoccupied with this new technology that they are unable to control their Facebook use. In fact, 17% of Facebook users surveyed reported they would use Facebook during sex and 63% while on the toilet (Back et al., 2010). In 2011, users in the U.S. spent an average of seven hours a month on Facebook, and 53% of users checked their Facebook profiles before getting out of bed in the morning (Das & Sahoo, 2011).

Many people access Facebook and other social networking sites from their smart phones as well as their computers. Research suggests that the usage of smart phones is habit-forming and possibly the most non-chemically addictive behavior of the 21st century (Jenaro, Flores, Gomez-Vela, Gonzalez-Fil, & Caballo, 2007; Shambare, Rugimbana, & Zhowa, 2012). One study done by the University of Chicago suggests that social media, such as Facebook and Twitter, may be as addictive as controlled substances

like alcohol or tobacco (Choi et al., 2009). Participants (aged 18-25) were given smart phones and periodically asked if they had urges to check social media sites and how strong those urges were. Results showed that urges to check social media were secondary only to urges for sex and sleep (Choi et al., 2009; Cooper, Putnam, Planchon, & Boies, 1999). In their study using the Facebook Intensity Scale (FBI) and neuroimaging, Meshi, Morawetz, and Heckeren (2013) found that higher FBI scores were associated with greater activity in the nucleus accumbens, a reward-related area of the brain.

Although Facebook might not be more addictive than controlled substances, recent data showed that using Facebook is linked to use of alcohol, tobacco, and marijuana (Horn, 2012a). In the U.S., the National Center on Addiction and Substance Abuse at Columbia University administered a social media survey (Califano, 2011). Researchers found that of teenage participants (ages 12-17), those who used Facebook were five times more likely to use tobacco, three times more likely to use alcohol, and two times more likely to use marijuana (Califano, 2011). Social networking sites, such as Facebook, have also become very popular among college students (Manago, Ward, Lemn, & Reed, 2015; Sponcil & Gitimu, 2012; Wright, 2012; Yesil, 2014). Young (1998c) and Kandell (1998) identify college students as the group most susceptible to problematic Internet use. Most college courses require Internet use (Gaudin, 2009). Research has shown that 8 to 50% of college students experience problems with Internet addiction, with problematic users spending many hours each day chatting with friends and browsing profiles on Facebook rather than studying (Kittinger, Correia, & Irons, 2012).

In their research using the Facebook Intensity Scale (FBI), Kalpidou, Costin, and Morris (2011) found that, among college students, the number of Facebook friends was inversely related to low academic and emotional adjustment. In a study by Thompson and Lougheed (2012), approximately 80% of the college students reported that Facebook was a part of their everyday activities and a significant element of their social culture. Additionally, 75% of participants reported knowing someone who they believed was addicted to Facebook. Studies using the Internet Addiction Test (IAT) observed a sizable number of undergraduate students who have problematic Internet use (Frangos, Frangos, & Sotiropoulos, 2012; Kittinger et al., 2012; Thompson & Lougheed, 2012).

In Peru, an association was found between problematic Facebook use and poor sleep quality in undergraduate college students, with more than half of the students reporting that they experienced poor sleep (Suganuma et al., 2007). A study was performed in Turkey to determine predictors of Facebook addiction in college students. Research found that severe depression, anxiety, insomnia, social motives, and time commitment were the best predictors of problematic Facebook use (TeWildt, Putzig, Zedler, & Ohlmeier, 2007).

Cam and Isbulan (2012) found that certain variables in college students correlated with Facebook addiction: males were more likely to be addicted than females, and seniors were more likely to be addicted to Facebook than underclassmen. However, Thompson and Lougheed (2012) found that female college students were more likely than males to report spending more time on Facebook than intended and often lost sleep because of Facebook use. Females felt closer to Facebook friends than friends seen daily. Facebook pictures caused feelings of negative self-image. Users felt out of touch when they had not

logged into Facebook. When they used Facebook it caused stress, anxiety or upset if they could not access Facebook, which led to wishes of not feeling the need to be on Facebook; in short they felt addicted (Cam & Isbulan, 2012; Koc & Gulyagci, 2013). Females reported spending almost 62% of their Internet time on Facebook compared to 44% for male participants. More females than males were deemed heavy Facebook users and females spent more time, on a daily basis, examining Facebook profiles than males (Thompson & Lougheed, 2012; Wolniczak et al., 2013; Yesil, 2014).

Surveys of Facebook users suggest that women and ethnic minorities use Facebook more frequently (Hargittai, 2008). Findings on gender difference in problematic Facebook use are consistent with research findings on problematic mobile-phone use, in which females engage in more problematic mobile-phone use than males (Takao, Takahashi, & Kitamura, 2009). It is suggested that this is because males tend to become addicted to solitary behaviors and women tend to become addicted to behaviors involving social interaction (Andreassen et al., 2012).

Researchers from Tel Aviv University in Israel examined the relationship between problematic Facebook use and psychosis. They included psychiatric patients who used Facebook to foster intense virtual relationships with others to assuage their feelings of loneliness. These patients had no history of psychosis but had psychotic episodes and delusions as a result of the intense online connection. Although they felt that the relationships initially helped their feelings of loneliness, ultimately they experienced feelings of betrayal, hurt, and invasion of privacy. Patients' attitudes and anxieties related to Facebook were significant predictors of clinical symptoms of these psychiatric disorders (Rosen, Whaling, Rab, Carrier, & Cheever, 2013). In a study of Facebook use

and depressive symptoms, Steers, Wickham, and Acitelli (2014) found that increased time spent on Facebook was associated with increased depressive symptoms.

As social networking sites like Facebook grow in popularity, some users of Facebook have decided to deactivate their accounts. Stieger, Burger, Bohn, and Voracek (2013) conducted a study of differences between active Facebook users and those who deactivated their Facebook accounts. Researchers found that the Facebook deactivators were more conscientious than current users and scored higher on Internet addiction scales. However, the primary reason they cited for “quitting” related to concerns about privacy, not concerns about Facebook addiction (Canan, Ataoglu, Nichols, Yildirim, & Ozturk, 2010; Stieger et al., 2013).

Personality Traits, Disorders, and Theories

Personality manifests within the individual, remains fairly consistent throughout life, and gives consistency and individuality to a person’s behavior (Funder, 1997; Watson, 1989). Personality is made up of relatively permanent and unique patterns of traits (Haslam, 2007). Personality traits are exhibited in a variety of social and personal contexts and are enduring patterns of perceiving, relating to, and thinking about the environment and self (Feist & Feist, 2009). When personality traits are maladaptive and cause significant impairment or distress, a personality disorder may be present (APA, 2013).

Personality disorders are enduring patterns of inner experience and behavior that deviate markedly from cultural norms in unacceptable or maladaptive ways. Personality disorders are stable, long standing, and can be traced to adolescence or early adulthood. To be considered a personality disorder, the personality pattern must not be attributed to

another mental disorder, the physiological effects of a substance, or another medical condition (APA, 2013). Lastly, to be considered a personality disorder, the personality pattern must manifest in two or more of the following areas: cognition or ways of perceiving and interpreting self, other people, and events; activity or the range, intensity, labiality, and appropriateness of emotional response; interpersonal functioning; and impulse control (APA, 2013; Feist & Feist, 2009; Funder, 1997; Haslam, 2007).

Theories have emerged to explain varying aspects of personality. Some personality theories focus on individual differences within personality (Funder, 1997). Other personality theories are concerned with explaining how personality develops (Feist & Feist, 2009; Haslam, 2007).

Narcissism

VandenBos (2007) considers the personality trait of narcissism to be “excessive self love or egocentrism” (p. 608). In psychoanalytic personality theory, narcissism is the taking of one’s own ego or body as a sexual object or focus of the libido, or the seeking or choice of another for relational purposes on the basis of similarity to the self (Meyer & Deitsch, 1996; VandenBos, 2007). The diagnostic category of Narcissistic Personality Disorder was first seen in the Diagnostic and Statistical Manual, 3rd edition, revised (DSM-III-R; APA, 1987). Broadly, Narcissistic Personality Disorder is defined as a pattern of traits and behaviors characterized by excessive self-concern and over-valuation of the self (Fossati et al., 2005; Livesley, 1984; VandenBos, 2007).

Prevalence rates for Narcissistic Personality Disorder have changed over the past few decades. Previously, the prevalence of Narcissistic Personality Disorder was estimated to be less than 1% for the general population and 2% to 16% for clinical

populations (APA, 2000). More recent research puts prevalence rates within the general population at slightly less than 1% and prevalence rates within outpatient psychiatric patients at around 2% (Torgersen, Kringlen, & Cramer, 2001; Walther & Reid, 2000).

The study of narcissism has increased in the past decades, both theoretically (Kernberg, 1976, 1980; Millon, 1981) and empirically (Emmons, 1987; Raskin & Hall, 1981; Raskin & Shaw, 1988; Raskin & Terry, 1988). Much of the discussion surrounding this personality disorder has focused on matters of etiology and internal dynamics. There is greater agreement, however, on the behavioral description of narcissism (Emmons, 1987; Hendin & Cheek, 1997; Millon, 1981; Raskin & Novacek, 1989). Essentially, individuals with a Narcissistic Personality Disorder diagnosis tend to focus, much more than individuals typically do, on the enhancement of self-esteem through a variety of behaviors, emotions, and interpersonal exchanges (APA, 2013). They tend to possess fragile personality integration and may, on occasion, experience brief psychotic episodes (Benjamin, Patterson, Greenburg, Murphy, & Hamer, 1996). Narcissistic individuals are driven by flattery, and they display arrogant, haughty behaviors and/or attitudes, an unrealistic, over-blown sense of self-importance, exhibitionistic attention seeking, an inability to take criticism, interpersonal manipulation, a lack of empathy, and sense of entitlement (Raskin, Novacek, & Hogan, 1991). Persons with a Narcissistic Personality Disorder diagnosis often appear conceited, boastful, snobbish, self-centered, tend to dominate conversations, frequently solicit admiration from others in an attempt to boost their self-esteem, and their admiration-seeking frequently alienates those around them (Campbell & Foster, 2007; Miller, Campbell, & Pilkonis, 2007; Russ, Shedler, Bradley, & Western, 2008).

Narcissistic Personality Disorder has traditionally been seen as a product of overindulgent parenting or absence of parental responses (Kernberg, 1980; Millon, 1981). These parenting styles typically elicit a sense of developmentally inappropriate entitlement. Additionally, research suggests a genetic influence in the development of Narcissistic Personality Disorder (Torgersen et al., 2001). Inherited aspects may include hypersensitivity, aggression, low frustration tolerance, and difficulty with affect regulation (Hersen, Turner, & Biedel, 2007).

Narcissism is primarily maintained through self-enhancement. Although narcissistic individuals actively seek out social contacts, they have little interest in forming and maintaining close, caring relationships (Campbell & Fehr, 1990). The narcissistic individual establishes social contacts as a source of self-enhancement, which is found through others (Campbell, Foster, & Finkel, 2002). Much of the narcissistic individual's self-construction and self-enhancement takes place in social arenas. They readily take advantage of opportunities for self-enhancement, which may include use of the Internet. The online world allows them to manipulate their social environment and to capitalize on positive events (Wieland, 2005).

History suggests that people with narcissistic personalities have always existed; however, some research suggests that narcissism has become more prevalent (Benjamin, et al., 1996; Trzesniewski, Donnellan, & Robbins, 2008a, 2008b; Twenge & Foster, 2010; Twenge, Konrath, Foster, Campbell, & Bushman, 2008). In fact, a cross-temporal meta-analysis found that the level of narcissism among American college students has risen over the past two decades (Twenge & Campbell, 2010). Unlike Eastern cultures, Western culture tends to be tolerant and even encouraging of individuality and self-

centeredness (Chak & Leung, 2004). Some researchers suggest this trend is a reason for narcissistic traits increasing in Western, individualist culture (Ceyhan & Ceyhan, 2008; Cooper, 1997; Dickinson & Pincus, 2003; Wang, 2001; Wink, 1991).

Rosen (2007) suggests that increasing narcissism may, in part, account for the popularity of social networking sites, such as Facebook. However, some researchers feel that it is not the technology that creates narcissism. Instead, narcissistic personalities seek technology that allows them to be the center of attention (McKinney, Kelly, & Duran, 2012; Rosen, 2007).

Although the diagnostic criterion for narcissistic personality disorder has changed very little since the DSM-III, the DSM-5 authors attempted to address what they identified as a shortcoming within the DSM-IV-TR approach to personality disorder. This shortcoming was the arbitrary boundary drawn between personality disorders and other mental disorders. To remove this boundary, the DSM-5 abandoned the multi-axial system, which differentiated personality disorders and other mental disorders by listing these diagnoses on different axes (APA, 2013).

Narcissism addiction model. Baumeister and Vohs' (2001) addiction model of narcissism proposes that the narcissist's desire for self-esteem and self-enhancement take on the qualities of addiction. Maintaining a certain level of heroin or alcohol in the bloodstream can be regarded as a form of self-regulation. This maintenance parallels the narcissistic individual's maintenance of social admiration (Baumeister & Vohs, 2001; Chang & Law, 2008). In a sense, narcissistic individuals become addicted to the admiration of others and must maintain it at certain levels (Baumeister & Vohs, 2001).

Cravings, withdrawal, and tolerance are the hallmarks of addiction. Craving for the approval of others is a common psychological trait, and the desire to be well regarded by others is relatively universal (Baumeister & Vohs, 2001). However, the cravings that define narcissism are superiority and intelligence (Chou, 2001; Gabriel & Critelli, 1994). Narcissistic individuals are constantly on the lookout for opportunities to bring themselves glory, and the addiction model of narcissism suggests that narcissistic individuals do not remain satisfied for long. Rather, they are perpetually in search of new and greater glories. The same level of success over time loses its potency for narcissistic individuals (Baumeister & Vohs, 2001; Chou & Hsiao, 2000).

Like other addicts who have been denied their fix, when narcissistic individuals receive criticism, or anything other than admiration, they exhibit distress and experience withdrawal from lack of continual admiration. This experience of withdrawal typically results in hostile and aggressive behavior (Baumeister & Vohs, 2001). Narcissistic individuals have short-lived relationships; therefore, they are often simultaneously involved in various stages of relationship establishment (Baumeister & Vohs, 2001). Because narcissistic individuals require an ever-increasing supply of admiration, they will never be satisfied in a healthy sense (Baumeister & Vohs, 2001; Campbell, Cumming, & Hughes, 2006; Chou & Hsiao, 2000).

Narcissism and problematic Internet use. Researchers have linked problematic online gaming, Internet, and social networking site use to narcissism (Buffardi & Campbell, 2008; Carpenter, 2012; Garcia & Sikstrom, 2014; Kapidzic, 2013; Kim, Namkoong, Ku, & Kim, 2008; Mehdizadeh, 2010; Ryan & Xenos, 2011; Weinstein & Lejoyeux, 2010; Wilson, Fornasier, & White, 2010). Similarly to other users, narcissistic

individuals tend to use Facebook to occupy time, pursue leisure interests, and interact with romantic partners (Muise et al., 2013). Additionally, researchers suggest that narcissistic individuals enjoy the exhibitionistic nature of social networking sites and the ability to pursue shallow relationships, trivial friendships, and emotionally detached communication (Buffardi & Campbell, 2008; Mehdizadeh, 2010; Vazire, Naumann, Rentfrow, & Gosling, 2008). Social networking sites have come to be seen as fertile ground for narcissistic individuals, and there has been speculation that sites such as Facebook actually breed narcissism (Bergen, Fearington, Davenport, & Bergen, 2011; Bibby, 2008; Buffardi & Campbell, 2008; Kramer & Winter, 2008; Walther, Van Der Heide, Kim, Westerman, & Tong, 2008).

Narcissistic individuals tend to consider themselves as highly attractive, special, and unique; therefore, they are motivated to display pictures to gain admiration (Buss & Chiodo, 1991; Emmons, 1984; John & Robins, 1994; Tunnell, 1984). This notion is supported by research showing that narcissism is related to the frequency of Facebook status and picture updates (Bergen et al., 2011; Carpenter, 2012; Garcia & Sikstrom, 2014; Kapidzic, 2013; Ong et al., 2011). Additionally, narcissistic individuals tend to post profile pictures that are rated by others to be more physically attractive and more self-promoting than the profile pictures of non-narcissists (Buffardi & Campbell, 2008).

Social networking sites are self-regulated environments that afford almost complete control over self-presentations, allowing users to convey only desirable information about them, fertile ground for narcissism to grow. Narcissistic individuals strive to present the best possible image of themselves to their online audience (Ang, 2005; Buffardi & Campbell, 2008). Social networking sites provide narcissistic

individuals with an audience and ideal stage for highly controlled self-presentation and a perfect platform to gain admiration (Barker, 2009; Christakis & Moreno, 2009; Wieland, 2005). Narcissism is linked to prominent aspects of self-presentation, such as the frequency of status updates and amount of self-promoting content displayed (Barker, 2009; Egan & McCorkindale, 2007; Garcia & Sikstrom, 2014; Kapidzic, 2013; Mehdizadeh, 2010; Ong et al., 2011).

Research shows that narcissistic individuals tend to be boastful and eager to talk about themselves. Therefore, persons with narcissistic personalities are drawn to public glory, such as the perceived glory that appearing on reality television provides (Wallace & Baumeister, 2002; Young & Pinsky, 2006). Given these findings, researchers hypothesized that narcissistic individuals would take advantage of similar opportunities to gain public glory on Facebook. As hypothesized, researchers found that narcissism predicted the posting of more self-promoting content on Facebook compared to people who are less narcissistic (Buffardi & Campbell, 2008).

In 2010, Mehdizadeh examined how narcissism and self-esteem are manifested on Facebook. Self-esteem and narcissistic personality self-reports were collected from 100 Facebook users at York University. Additionally, participants' pages were coded based on self-promotional content features. Correlation analyses revealed that individuals high in narcissism and low in self-esteem tended to engage in greater online activity as well as post more self-promotional content (Mehdizadeh, 2010). In their study using the FBI, Pettijohn, LaPiene, Pettijohn, and Horting (2012) found that college students with higher levels of narcissism reported having more Facebook friends and using Facebook to enhance their self-esteem.

Other researchers examined the relationship between narcissism and adolescents' self-presentation in their Facebook profiles (Ong et al., 2011). Specifically, they considered how narcissism and extraversion manifest in adolescents' Facebook profiles. Results suggest that narcissistic adolescents self-rated their Facebook profile pictures as more physically attractive, more fashionable, more glamorous and cooler than did their less narcissistic peers. Additionally, narcissistic adolescents updated their Facebook statuses more frequently than the less narcissistic adolescents (Ong et al., 2011). These results support the general view that narcissistic adolescents tend to enjoy the self-presentational nature of social networking sites. Pabian, DeBacker, and Vandebosch (2015) found that higher FBI scores were associated with both narcissism and engaging in cyber-aggression on Facebook. Given that narcissism is negatively associated with empathy, impulse control, and aggression, these researchers identified the need for a greater understanding of narcissism, social networking use, and self-presentation by adolescents (Bibby, 2008; Buffardi & Campbell, 2008; Ko et al., 2006; Lei & Wu, 2007; Li, 2010; Ong et al., 2011).

The Five Factor Model of Personality

Personality is defined as an individual's traits or attributes that are temporally stable and across all situations (Funder, 1997; Watson, 1989). Traits other than narcissism may also impact Facebook use. One prominent way of categorizing personality is with the Five Factor Model (FFM). This model has received considerable empirical support and has become the standard manner in which to organize and measure personality traits (Costa & McCrae, 1992a; Wiggins, 1996). The FFM divides personality into five dimensional traits: extraversion, agreeableness, conscientiousness, neuroticism,

and openness. These five personality factors have been shown to relate to behavior in a broad variety of contexts. Research has also shown that these five factors strongly influence people's formation and maintenance of social ties and have been used to predict online social behaviors (Bookman, Taylor, Adams-Campbell, & Kittles, 2002; Grohol, 2000; Pocius, 1991; Ross et al., 2009); in particular, the FFM predicts Facebook use (Ross et al., 2009).

Research has identified an association between personality factors within the FFM and substance abuse, specifically the factors neuroticism and extraversion (Morahan-Martin, 2005). Extraversion has been positively correlated with addiction in general, such as exercise, mobile phone use, shopping, and Facebook use (Caci, Cardaci, Tabacchi, & Scrima, 2014; Kao & Craigie, 2014; Seidman, 2013). One could argue, based on these findings, that addictive behaviors, including problematic Internet use, may be related to personality traits (Andreassen et al., 2013). Discussed next is how neuroticism and extraversion relate to addiction, especially involving social media.

FFM and Neuroticism

Neuroticism is characterized by a chronic level of emotional instability and psychological distress (Costa & McCrae, 1992b). Others define neuroticism as the extent to which individuals' experience and display negative emotions, such as anxiety, sadness, embarrassment, depression, guilt, and poor coping skills (Grohol, 2009; Morahan-Martin, 2005; Morahan-Martin & Schumacher, 2000). High levels of neuroticism are associated with sensitivity to threats, irrational ideas, reduced impulse control, and the inability to manage stress (Costa & McCrae, 1992a; Ross et al., 2009).

In 1980, Eysenck & Eysenck proposed that there is a biological basis for

neuroticism. They hypothesized that neuroticism is a product of sensitive limbic and autonomic systems, which determine reactivity to environmental and psychological stimuli. Highly reactive individuals are typically impulsive, easily startled, and frequently agitated. These individuals may use addictive substances for their calming and rewarding effects (Eysenck & Eysenck, 1980). Research has shown that neuroticism is highly correlated with addiction (Ross et al., 2009; Sidoti & Devasagayam, 2010). Cocaine, heroin, opiate, and marijuana users typically score very high on neuroticism, and alcohol consumption among young adults can be predicted through high levels of neuroticism (Grohol, 2009; Morahan-Martin, 2005).

Neuroticism and problematic Facebook use. Neuroticism is correlated with social anxiety, public self-consciousness, and likelihood to stringently control information shared (Grohol, 2009; Ross et al., 2009; Suhail & Bargees, 2006). Because they are particularly fearful of rejection, neurotic people typically try to present themselves in a consistently attractive manner (Morahan-Martin & Schumacher, 2000). They also tend to see Facebook as an outlet that is safe for self-expression, where they may present an idealized version of themselves (Chou, Condrón, & Belland, 2005). Additionally, research has found that persons possessing high levels of neuroticism are more likely to use the Internet to avoid loneliness (Kao & Craigie, 2014; Morahan-Martin & Schumacher, 2000; Seidman, 2013; Whang & Chang, 2004).

Neuroticism has been positively correlated with problematic Facebook use (Caci et al., 2014; Cooper, Smillie, & Corr, 2010; Kao & Craigie, 2014; Seidman, 2013). It has been suggested that because neurotic individuals are anxious about self-presentation, they may seek acceptance and social contact through Facebook (Caci et al., 2014; Kao &

Craigie, 2014; Lahey, 2009; Seidman, 2013). This notion is supported by the finding that neuroticism is associated with the belief that Facebook provides opportunities to connect with others and to get support and attention under circumstances where rejection is unlikely (Caci et al., 2014; Cooper et al., 2010; Kao & Craigie, 2014; Seidman, 2013).

FFM and Extraversion

The *American Psychological Association Dictionary* characterizes extraversion as “an orientation of one’s interests and energies toward the outer world of people and things rather than the inner world of subjective experience” (VandenBos, 2007; p. 359). Others have defined extraversion as the extent to which individuals are outgoing, active, assertive, and talkative (Ross et al., 2009). Extraversion is a broad interpersonal trait and, with introversion, exists on a continuum of attitudes and behaviors (Costa & McCrae, 1992b; John, Naumann, & Soto, 2008; Petrie & Gunn, 1998). Most theories of personality include a dimension similar to extraversion. The concept of extraversion originated with Carl Jung and is one of the elements of the Five-Factor and Big Five Personality Models. Additionally, it is one of the three personality dimensions included in Eysenck’s typology (VandenBos, 2007).

Extraverted people tend to have strong nervous systems and are slow to inhibit excessive stimulation, making them feel more at ease in social situations and better able than introverts to tolerate a lot of activity (Eysenck, 1981). However, because of their naturally low level of arousal, they require more stimulation to maintain an optimal level of arousal. Extraverts tend to hunger for stimuli, are less conditioned to social values, and have low inhibitory tendencies. Likewise, extraversion has been associated with risk taking, lack of constraint and caution, failure to conform, and impulsivity (Costa &

McCrae, 1992a). All of these traits make extraverts more likely to engage in problematic behaviors and substances abuse (Morahan-Martin, 2005).

Extraverts tend to engage in social interactions more easily and frequently (Morahan-Martin, 2005). They are typically outgoing, gregarious, sociable, expressive, active, assertive, warm, and self-confident (Grohol, 2009; VandenBos, 2007). Other research links extraversion and narcissism (Vazire et al., 2008). For example, the Extraversion Scale of the Eysenck Personality Questionnaire has been positively and significantly correlated with the Narcissistic Personality Inventory (NPI; Raskin & Hall, 1979). This suggests that the two constructs are not orthogonal, rather sharing features.

Extraversion and social media. Certain personality traits, such as extraversion, impact online communication patterns (Brown, 1993; Griffiths, 1996; Kraut et al., 1998; Ross et al., 2009; Whang & Chang, 2004). Introverts may use social media to compensate for social deficits, while extraverts tend to use social media for social enhancement and as an additional way of expressing themselves (Kuss & Griffiths, 2011; Ross et al., 2009; Song, Larose, Eastin, & Lin, 2004; Suhail & Bargees, 2006; Xu et al., 2008). Extraverts tend to use Facebook to communicate with others by contacting friends and commenting on friends' pages (Mottram & Fleming, 2009). Research suggest that Facebook may appeal to extraverts because of the potential for unlimited contact with friends, social enhancement, and to satisfy their needs for high levels of stimulation and desires for frequent social interaction (Correa et al., 2010; Gosling, Rentfrow, & Swann, 2003).

Goals of the Current Study

Social networking sites, such as Facebook, impact the lives and wellbeing of users. We know that some people develop preoccupations with certain aspects of the

Internet, and research suggests that individuals with problematic Internet use are at significant risk for psychological, economic, relational, and medical problems (Aboujaoude et al., 2006; Brown & Bobkowsky, 2011; Pies, 2009). Advancing understanding of the personality traits associated with problematic Facebook use will hopefully lead to improved therapeutic interventions, better understanding of possible etiology, inform prevention policies, and guide development of possible diagnostic criteria. One of the goals of this study was to add to what is known regarding problematic Facebook use and the personality traits of its users. Because it is important to learn about psychological underpinnings of problematic Internet use, such as problematic Facebook use, another purpose of this study was to examine the personality traits putting individuals at risk for problematic Facebook use.

Controversy exists within the field of psychology regarding whether problematic Internet use should be included as a diagnoses in the DSM (APA, 2013; Pies, 2009). Therefore, more research is needed to better understand problematic Internet use and to determine if it warrants DSM diagnostic inclusion (Pies, 2009). To address this research need, the present researcher has included an exploratory questionnaire (Exploratory Facebook Use Questions) with item analogues to the proposed diagnostic criteria for Internet Gaming Disorder included in the Conditions for Further Study section of the DSM-5 (APA, 2013). After an exhaustive review of the literature, the present researcher uncovered no prior research on problematic Facebook use, including questions based on the proposed DSM-5 diagnostic criteria for Internet Gaming Disorder. The Exploratory Facebook Use Questions is a tentative composite measure and its use in this study was investigative in nature. Development of a new instrument was not a goal of this study;

therefore, the Exploratory Facebook Use Questions should be studied further to better determine reliability and validity.

Hypotheses

The following hypotheses were tested in this research. Those that were replications of previous research were distinguished from those that advanced understanding in novel ways.

Hypothesis One

It was hypothesized that adult participants with higher levels of narcissism (higher NPI-16 scores) would also report higher levels of problematic Facebook use (higher Exploratory Facebook Use Question, BFAS, and FBI scores). Specifically, (1a) those with higher level of narcissism (higher NPI-16 scores) would report higher levels of problematic Facebook use as reflected in higher Exploratory Facebook Use Question scores, (1b) those with higher levels of narcissism (higher NPI-16 scores) would report higher levels of problematic Facebook use as reflected in higher BFAS scores, and (1c) those with higher levels of narcissism (higher NPI-16 scores) would report higher levels of problematic Facebook use as reflected in higher FBI scores.

Justification. Researchers have linked the use of social networking sites, such as Facebook, to specific personality traits, in particular, narcissism (Buffardi & Campbell, 2008; Mehdizadeh, 2010; Wilson et al., 2010). Ryan and Xenos (2011) found that Facebook users tend to score higher on measures of narcissism than non-users. LaBarbera, La Paglia, and Valsavoia (2009) found that people with narcissistic tendencies are particularly prone to engaging with social networking sites in an addictive way. Numerous researchers have linked problematic Facebook use to narcissism (Garcia

& Sikstrom, 2014; Kapidzic, 2013; Kim et al., 2006; LaBarbera et al., 2009; Weinstein & Lejoyeux, 2010; Wilson et al., 2010).

Researchers disagree as to whether problematic Internet use should be included as diagnoses in the DSM (APA, 2013; Pies, 2009). However, there is agreement that further research is needed to better understand problematic Internet use and to determine if it warrants inclusion as a DSM diagnosis (Pies, 2009). Therefore, previously researched measures of problematic Facebook use (BFAS and FBI) and new Exploratory Facebook Use Questions based on the proposed DSM-5 diagnostic criteria for Internet Gaming Disorder will be studied to enhance current knowledge of the relationship between narcissism and problematic Facebook use. Although research has been conducted involving the NPI-16, BFAS, and FBI, this research question was new by including Exploratory Facebook Use Questions based on the proposed DSM-5 diagnostic criteria for Internet Gaming Disorder.

Hypothesis Two

It is hypothesized that adult participants with higher levels of extraversion (higher IPIP extraversion scores) would also report higher levels of problematic Facebook use (higher Exploratory Facebook Use Questions, BFAS, and FBI scores). Specifically, (2a) participants with higher levels of extraversion (higher IPIP extraversion scores) would also report higher level of endorsements of Exploratory Facebook Use Questions, (2b) participants with higher levels of extraversion (higher IPIP extraversion scores) would also yield higher BFAS scores, and (2c) participants with higher levels of extraversion (higher IPIP extraversion scores) would also yield higher FBI scores.

Justification. Among the five factors within the Five Factor Model of Personality, the most important personality trait in consistently predicting problematic and non-problematic social networking site usage is extraversion (Correa et al., 2010; Kuss & Griffiths, 2011). Specifically, researchers have found that persons rated high in extraversion were more likely to utilize Facebook (Nadkarni & Hofmann, 2012; Wilson et al., 2010). Additionally, Andreassen et al. (2012) found that scores on the Bergen Facebook Addiction Scale are positively related to extraversion. Previously researched measures of extraversion (IPIP) and problematic Facebook use (BFAS and FBI), and new Exploratory Facebook Use Questions based on the DSM-5 diagnostic criteria for Internet Gaming Disorder would be assessed to provide data testing for a link between problematic Facebook use and the personality characteristic of extraversion. Although research has been conducted involving the IPIP, BFAS, and FBI, this hypothesis extends what was known by including the DSM-5 related Exploratory Facebook Use Questions.

Hypothesis Three

It was hypothesized that participants with higher levels of problematic Internet use (higher IAT scores) would also report higher levels of problematic Facebook use (higher Exploratory Facebook Use Questions, BFAS, and FBI scores). Specifically, (3a) participants with higher levels of problematic Internet use (higher IAT scores) would also report higher level of endorsements of Exploratory Facebook Use Questions, (3b) participants with higher levels of problematic Internet use (higher IAT scores) would also yield higher BFAS scores, and (3c) participants with higher levels of problematic Internet use (higher IAT scores) would also yield higher FBI scores.

Justification. Research has shown that people can form addictions to more than chemical substances and point to addictive and habitual behaviors related to compulsive gambling, chronic overeating, sexual compulsions, obsessive television watching, Internet addiction, and problematic Facebook use (Griffiths, 2000; Holden, 1997; Young, 1998c; Young, 1999). Excluding Internet pornography, problematic Internet use most frequently occurs in the context of interactive online applications, such as Facebook (Czincz & Hechanova, 2009; Fioravanti et al., 2012). Currently, the available activities on Facebook have expanded beyond social networking. Besides sending messages and posting pictures, Facebook users can now play online games, gamble, and watch videos (Griffiths, 2005, 2012; King et al., 2010; Kuss & Griffiths, 2011). This research suggests that these two behavioral addictions (problematic Facebook use and problematic Internet use) are closely linked, but not identical. Previously researched measures of problematic Internet use (IAT) and problematic Facebook use (BFAS and FBI); in addition to new Exploratory Facebook Use Questions based on the proposed DSM-5 diagnostic criteria for Internet Gaming Disorder would be assessed.

Hypothesis Four

It was hypothesized that, after the variance associated with problematic Internet use (IAT scores) has been accounted for, narcissism (NPI-16 scores), extraversion (IPIP extraversion scores), and neuroticism (IPIP neuroticism scores) would account for significantly more variance in problematic Facebook use (BFAS scores) in males than in females.

Justification. Although some researchers have found males to be more addicted to Facebook than females (Cam & Isbulan, 2012), the majority of research on gender

differences in problematic Facebook use have observed that females tend to be more addicted to Facebook than males (Koc & Gulyagci, 2013; Thompson & Loughheed, 2012; Wolniczak et al., 2013; Yesil, 2014). Research on gender differences related to other behavioral addictions, such as pathological gambling and video-game use, consistently shows that males are higher in problematic use than females (Mentzoni et al., 2011; Molde et al., 2009). However, research on mobile-phone use shows that females engage in more problematic use than males (Takao et al., 2009). Researchers have theorized that these differences exist because males tend to become addicted to solitary behaviors and women tend to become addicted to behaviors involving social interaction (Andreassen et al., 2012). The researcher hopes that findings will help resolve prior conflicting research and advance our understanding of problematic Facebook use as influenced by gender or differing by gender.

Hypothesis Five

It was hypothesized that problematic Facebook use (BFAS and FBI scores) would be associated with three personality traits: narcissism (NPI-16 scores), extraversion (IPIP extraversion scores), and neuroticism (IPIP neuroticism scores). Moreover, narcissism would account for the greatest variance, followed by extraversion and neuroticism, respectively, after the variance associated with gender has been accounted for.

Justification. Research shows that personality influences Facebook use and that social networking habits are influenced by overall personality (Goodmon, Smith, Ivancevich, & Lundberg, 2014; Ivcevic & Ambady, 2012; Kapidzic, 2013; Kosinski, Stillwell, & Graepel, 2013). Narcissistic individuals tend to consider themselves as highly attractive, special, and unique (Buss & Chiodo, 1991; Emmons, 1984; John & Robins,

1994; Tunnell, 1984). They also tend to be boastful and eager to talk about themselves (Wallace & Baumeister, 2002; Young & Pinsky, 2006). Social networking sites, such as Facebook, provide narcissistic individuals with an audience and a perfect platform to gain admiration (Barker, 2009; Christakis & Moreno, 2009; Wieland, 2005). Although narcissistic individuals actively seek out others, they have little interest in forming and maintaining close, caring relationships (Campbell & Fehr, 1990). Instead they establish social contacts as a source of self-enhancement (Campbell et al., 2002). Social networking sites, such as Facebook, provide narcissistic individuals with an almost endless supply of shallow relationships (Buffardi & Campbell, 2008; Mehdizadeh, 2010; Vazire et al., 2008). Because Facebook easily and readily meets many of the core needs of the narcissistic individual, it was hypothesized that narcissism would account for the most variance.

Extraverts tend to have strong nervous systems and are slow to inhibit excessive stimulation (Correa et al., 2010; Eysenck, 1981). Because of their naturally low arousal, they require more stimulation (Costa & McCrae, 1992a). These factors make extraverts more likely to engage in problematic behaviors (Morahan-Martin, 2005). Extraverts are outgoing, gregarious, and engage in social interactions easily and frequently (Grohol, 2009; Morahan-Martin, 2005; VandenBos, 2007). Facebook indirectly meets extraverts' need for stimulation and social interaction (Correa et al., 2010; Gosling et al., 2003). Because Facebook readily, although indirectly, meets many of the core needs of the extraverted individual, it was hypothesized that extraversion would account for the second most variance.

It has been theorized that neuroticism is a product of sensitive limbic and autonomic systems, which determine reactivity to environmental and psychological stimuli (Eysenck & Eysenck, 1980; Seidman, 2013). Neuroticism is correlated with social anxiety, public self-consciousness, fear of rejection, and likelihood to control what information is shared (Grohol, 2009; Morahan-Martin & Schumacher, 2000; Ross et al., 2009; Suhail & Bargees, 2006). Persons possessing high levels of neuroticism are more likely to use the Internet to avoid loneliness (Caci et al., 2014; Kao & Craigie, 2014; Morahan-Martin & Schumacher, 2000; Seidman, 2013; Whang & Chang, 2004). Because neurotic individuals are anxious about self presentation, they seek acceptance and social contact through Facebook, which provides opportunities to connect with others and gain support under circumstances where they can tightly control the information they share and present an idealized version of themselves (Beard, 2002; Caci et al., 2014; Chou et al., 2005; Cooper et al., 2010; Fioravanti et al., 2012; Kao & Craigie, 2014; Lahey, 2009; Seidman, 2013).

Although Facebook use may cause some anxiety, as compared to face-to-face interactions, it more safely meets many of the social needs of the neurotic individual (Munteanu et al., 2009). Therefore, it was hypothesized that neuroticism would predict the third most variance. Although research on problematic Facebook use has been conducted involving the BFAS and FBI, this research question was new because, it concurrently explores the relative strength of the relationship between these three personality dimensions and problematic Facebook use.

Hypothesis Six

It was hypothesized that narcissism (NPI-16 scores), extraversion (IPIP extraversion scores), and neuroticism (IPIP neuroticism scores) would still account for significant variance in problematic Facebook use (BFAS scores) after the variance associated with problematic Internet use (IAT scores) has been accounted for.

Justification. Narcissism and extraversion have been linked with stimulus seeking (Costa & McCrae, 1992a; Eysenck, 1981); while neuroticism is associated with stimuli avoidance (Caci et al., 2014; Eysenck & Eysenck, 1980). It was hypothesized that this stimulus seeking is a product of low nervous system arousal, in the case of narcissism and extraversion, and high nervous system arousal, in the case of neuroticism (Hersen et al., 2007). Individuals use substances and engage in behaviors for their calming and stimulating effects (Eysenck & Eysenck, 1980). This use of substances and behaviors can lead to problematic use if it is a particularly rewarding means of affect and arousal regulation (Correa et al., 2010; Eysenck & Eysenck, 1980). Research has shown that Facebook use is a particularly rewarding behavior for persons with a high level of any one of the three the personality traits, narcissism, extraversion, or neuroticism (Fioravanti et al., 2012; Kao & Craigie, 2014; Seidman, 2013). Although research has been conducted on problematic Facebook use and the personality traits of narcissism, extraversion, and neuroticism, this research question was new because it explores problematic Facebook use by predicting it from personality factors after the variance associated with problematic Internet use have been accounted for.

Hypothesis Seven

It was hypothesized that adult participants with higher Exploratory Facebook Use Question scores would also report higher levels of problematic Facebook use including (higher BFAS and FBI scores). Specifically, (7a) those with higher Exploratory Facebook Use Question scores would also report higher BFAS scores and (7b) those with higher Exploratory Facebook Use Question scores would also report higher FBI scores.

Justification. There is considerable controversy over whether problematic Internet use should be included as a diagnosis in the DSM (Pies, 2009). The APA has encouraged research in the area of Internet Gaming Disorder by including it in the Conditions for Further Study section of the DSM-5 (APA, 2013). Continued research into various types of problematic Internet use, including problematic Facebook use, would enhance understanding and inform decisions about whether behavioral addictions, such as Internet and Facebook addiction, have merit as stand-alone disorders and warrant placement in forthcoming editions of the DSM (APA, 2013; Pies, 2009). Insufficient data have been published on this issue since publication of the DSM-5. Previously researched measures of problematic Facebook use (BFAS and FBI) and Exploratory Facebook Use Questions based on the proposed DSM-5 diagnostic criteria for Internet Gaming Disorder would be correlated in this research. Although research has been conducted involving the BFAS and FBI, this research question was new by including Exploratory Facebook Use Questions based on the proposed DSM-5 diagnostic criteria for Internet Gaming Disorder.

CHAPTER TWO

METHODS

Participants

After performing a power analysis (Faul, Erdfelder, Buchner, & Lang, 2009; Faul, Erdfelder, Lang, & Buchner, 2007), it was determined that the sample would include 267 Facebook users (persons with an active Facebook account). The sample includes Facebook users, 18 years of age and older, recruited from social media (Facebook), as well as from faculty, undergraduate, and graduate students at a mid-sized Southern University.

Measures

Demographics Questions

The researcher created a brief demographics questionnaire. The questionnaire consisted of four items. Because research has identified that age is related to Facebook use frequency and number of Facebook friends, participants were asked, through open-ended questions, to provide their age (Boyd, Hargittai, Schultz, & Palfrey, 2011; Levy, Chung, Bedford, & Navrazhina, 2014; McAndrew & Jeony, 2015; Tong, Van Der Heide, Langwell, & Walther, 2008). The other demographics items inquired about the participants' gender, ethnicity, and educational level. The demographics questionnaire, containing open-ended items, can be found in Appendix A of this document.

Exploratory Facebook Use Questions

An Exploratory Facebook Use Questionnaire, based on the DSM-5 proposed criteria for Internet Gaming Disorder, was created by the researcher. The specific items were created using wording similar to that contained within the DSM-5 proposed criteria for Internet Gaming Disorder. Subjects responded based on a six point Likert scale using anchors of (1) does not apply, (2) rarely, (3) occasionally, (4) frequently, (5) often, and (6) always. Higher scores indicate problematic Facebook use. The Exploratory Facebook Use Questions can be found in Appendix B of this document.

The nine Exploratory Facebook Use Questions were subjected to a principal components factor analysis to determine whether it assesses different aspects of a single latent construct: problematic Facebook use. Prior to performing the principal components analysis, suitability for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of coefficients of .5 and above. The principal components analysis revealed the presence of a single factor with an eigenvalue exceeding 1, explaining 74.14% of the variance. All items were retained because they all positively loaded with .5 or higher (Matsunaga, 2010). Table 1 presents descriptive statistics for the nine questions as well as the factor loadings. This result provides some justification for treating the sum of the Exploratory Facebook Use Questions as a composite variable indicative of problematic Facebook use. Beyond factor analysis evidence, additional reliability and validity evidence that these nine questions assess a more general construct follow.

Internal consistency. Analysis of the Exploratory Facebook Use Questions provides good evidence of internal consistency. The α coefficient (Cronbach's α) for the nine Exploratory Facebook Use Questions is .95, showing that the items possess high

internal consistency. The preceding provides further justification for treating the Exploratory Facebook Use Questions as a tentative research measure of problematic Facebook use.

Face validity and content validity. The Exploratory Facebook Use Questions possess face validity. Each of the questions inquires about the frequency of behaviors that appear to be related to problematic Facebook use. The Exploratory Facebook Use Questions also possess content validity. Each of the Exploratory Facebook Use Questions are based directly on the proposed diagnostic criteria for Internet Gaming Disorder. Moreover, these criteria are included in the Conditions for Further Study section of the DSM-5, an authoritative text commonly used within the mental health field (APA, 2013). Table 1 notes descriptive statistics and factor loadings.

Table 1

Exploratory Facebook Use Questions Descriptive Statistics and Factor Loadings

Item	<i>M</i>	<i>SD</i>	Component 1
1. I feel preoccupied with being on Facebook.	2.03	1.00	.74
2. I experience withdrawal symptoms (irritability, anxiety, and sadness) when unable to use Facebook.	1.40	.92	.91
3. I find myself spending an increasing amount of time on Facebook.	2.01	1.06	.79
4. I have tried to better control my Facebook use, but have been unsuccessful.	1.63	1.10	.84
5. I am less interested in previous hobbies and entertainment as a result of my Facebook use.	1.57	1.08	.89
6. I continue to use Facebook despite my use causing problems.	1.52	1.00	.92
7. I have been untruthful with others regarding my Facebook use.	1.39	.96	.87
8. I use Facebook to escape or relieve feelings of guilt, anxiety, or helplessness.	1.49	.95	.87
9. My Facebook use jeopardized or caused the loss of a relationship, job, or educational opportunity.	1.31	.87	.91

Bergen Facebook Addiction Scale

As research on Internet addiction has increased, researchers have suggested that addiction to Facebook may be a specific form of Internet addiction. Because the use of Facebook is growing rapidly and there is an increasing proportion of problematic use, researchers identified the need for psychometrically sound procedures for assessing problematic Facebook use (Griffiths, 2005; Korkeila, Kaarlas, Jaaskelainen, Vahlberg, & Taiminen, 2009; Wilson et al., 2010). The Bergen Facebook Addiction Scale (BFAS) was developed by Andreassen and colleagues (2012) and was one of the first measures developed to study problematic Facebook use. It was utilized in the current study to obtain data on the problematic Facebook use of participants.

The BFAS initially consisted of a pool of 18 items, which address each of the six core elements of addiction (salience, mood modification, tolerance, withdrawal, conflict, and relapse). Andreassen and colleagues administered the 18-item version to 423 students along with several other standardized self-report scales. Based on this research, the current version of the BFAS was developed (Andreassen et al., 2012). The current version of the BFAS includes six items in which subjects respond on a five point Likert scale using anchors of (1) very rarely, (2) rarely, (3) sometimes, (4) often, and (5) very often. Higher scores indicate problematic Facebook use and positive attitudes toward Facebook (Andreassen et al., 2012). The instrument is comprised of items based on each of the six core features of addiction (Andreassen et al., 2012).

The BFAS was originally developed by Norwegian researchers and was first administered to participants in Norway (Andreassen et al., 2013). This scale has since been used in research performed in Turkey, Thailand, and China (Phanasathit, Manwong,

Hanprathet, Khumsri, & Yingyeun, 2015; Satıcı & Uysal, 2015; Wang, Ho, Chan, & Tse, 2015). The authors of the BFAS report that it has acceptable psychometric properties regarding internal consistency, factor structure, reliability, content validity, convergent validity, and discriminant validity. The factor structure of the BFAS was good (RMSEA = .046, CFI = .99) and the coefficient α was .83. All loadings were above .50. The 3 week test-retest reliability coefficient was .82 ($p < .01$; 95% CI = .75; Andreassen et al., 2012). The BFAS can be found in Appendix C of this document.

Facebook Intensity Scale

The Facebook Intensity Scale (FBI) was developed by Elliston et al. (2007) to measure Facebook usage beyond frequency and duration. The scale incorporates questions related to emotional connectedness to the site and integration into individuals' daily activities. The scale consists of eight items rated on a five-point Likert scale anchors. Scores are computed by calculating the mean of all of the items in the scale (Elliston et al., 2007).

Researchers have found the FBI to be a reliable measure of users' attitudes regarding Facebook use (Beane, 2012; Elliston et al., 2007). Elliston et al. (2007) reported an α of .83 and subsequent researchers have found an α of .87 (Beane, 2012). The FBI has demonstrated convergent validity (Beane, 2012). Elliston et al. (2007) reported FBI scores positively correlated with participants' number of Facebook friends, as well as the amount of time spent on Facebook (Beane, 2012). The FBI also demonstrates discriminant validity. In factor analyses of the FBI, all six items load on one factor ($\alpha = .83$) (Beane, 2012; Elliston et al., 2007; Ross et al., 2009). Additionally, the FBI has demonstrated good construct validity. FBI scores predicted Facebook use for

obtaining ($\alpha = 0.87$), maintaining social capital ($\alpha = 0.81$), and overall satisfaction with Facebook (Beane, 2012; Elliston et al., 2007; Ross et al., 2009). The FBI can be found in Appendix D of this document.

Internet Addiction Test

The IAT was developed by Young (1996) to address the growing need for a valid instrument to measure excessive Internet use. The IAT consists of 20 items, with item responses ranging from 0 (Does Not Apply) to 5 (Always). Overall, the IAT measures the degree to which respondent's Internet use impacts their daily routine, social life, productivity, sleeping patterns, and feelings. IAT scores range from a minimum of 20 to a maximum score of 100, with a score of 70-100 indicating significant problems (Frangos et al., 2012; Khazaal et al., 2008).

Widyanto and McMurrin (2004) performed a factor analysis of the IAT that revealed six factors: salience, excessive use, neglecting work, anticipation, lack of control, and neglecting social life. The six IAT factors showed good internal consistency and concurrent validity, with salience being the most reliable ($\alpha = 0.82$). Additionally, salience explained most of the variance. All of the factors significantly correlated (Pearson's r) with each other, with correlations ranging from $r = 0.226$ to $r = 0.622$. (Widyanto & McMurrin, 2004). The IAT can be found in Appendix E of this document.

Narcissistic Personality Inventory-16

Raskin and Terry (1988) noted a great deal of ambiguity in the personality literature concerning the primary aspect of narcissism. Therefore, they developed the Narcissistic Personality Inventory and included a variety of heterogeneous traits in their conceptualization of narcissism (Ackerman et al., 2011). These aspects include a

grandiose sense of self-importance or uniqueness, an inability to tolerate criticism, and the expectation of special favors without assuming reciprocal responsibilities (Miller et al., 2011). This definition covers a constellation of concepts and the Narcissistic Personality Inventory sought to measure all of them as aspects of a single personality trait (Raskin & Terry, 1988; Watson, Grisham, Trotter, & Biderman, 1984).

In 1981, Raskin and Hall reported that participants high in narcissism typically had many social contacts; however, they also tended to be solitary. Additionally, those scoring high on narcissism tended to have many short-term relationships and only a few long-term relationships. With these traits—narcissistic, solitary, many social contacts, many short-term relationships, and few long-term relationships—it is easy to see how Facebook might be an appealing venue through which individuals could interact with others (Buffardi & Campbell, 2008; Davis, Flett, & Besser, 2002; Raskin & Hall, 1981).

Pall (2014) indicates that the Narcissistic Personality Inventory-40 (NPI-40) is one of the most commonly used instruments in current research on narcissism. Although it is based on DSM-III criteria for Narcissistic Personality Disorder, it remains a popular narcissism measure because the essential features related to the diagnostic criteria for Narcissistic Personality Disorder have changed little in subsequent publications of the DSM (Pall, 2014). Raskin and Terry (1988) identified seven factors in the NPI-40; these factors include: authority, superiority, exhibitionism, entitlement, vanity, exploitiveness, and self-sufficiency, which all roughly map onto the DSM-III criteria for Narcissistic Personality Disorder (Ames et al., 2006; Raskin & Terry, 1988).

The NPI-16 was created using items from the longer NPI-40 developed by Raskin and Terry (1988). The NPI-16 closely parallels the NPI-40 and was developed for use in

situations where time constraints and respondent fatigue are potential concerns. The NPI-16 is a 16 item forced-choice inventory created by Ames et al. (2006). It instructs respondents to read 16 pairs of statements. Each of the 16 pairs has one statement that is consistent with DSM-III criteria for narcissism and one statement that is not.

Respondents are instructed to choose the statement that most accurately describes them. The scale is scored by allotting one point to each narcissistic response consistent with the DSM-III diagnostic criteria for narcissism, then adding all of the points to determine the overall score (APA, 2013; Ames, et al., 2006).

In research on narcissism and Facebook use, Buffardi and Campbell (2008) found that, among undergraduates, higher scores on the NPI were related to Facebook self-promotion (Buffardi & Campbell, 2008). Also in 2010, Mehdizadeh administered the NPI-16 and the Rosenberg Self-Esteem Scale scores to undergraduate Facebook users. The results suggested that participants with high levels of narcissism and low levels of self-esteem were likely to spend more than an hour a day on Facebook. Additionally, participants with high scores on the Narcissistic Personality Inventory-16 were more likely to post self-promotional photos, which had been enhanced by using Photoshop (Mehdizadeh, 2010).

The NPI-16 has been used with clinical and non-clinical populations and has shown adequate face, internal, discriminate, and predictive validity. The NPI-40 and NPI-16 correlated at $r = .90$ ($p < .001$). NPI-16 scores were found to remain stable over a 5 week period ($r = .85$, $p < .01$) (Ames et al., 2006; Raskin & Terry, 1988). The NPI-16 can be found in Appendix F of this document.

The International Personality Item Pool

The IPIP is a public domain collection of items for use in personality research. It was developed with the intention of providing widespread, rapid access to measures of individual differences. Specific items from the IPIP were designed to correlate with the Five Factor Model of Personality traits identified by McCrae and John (1992).

The five personality traits identified by McCrae and John (1992) include extraversion, agreeableness, conscientiousness, neuroticism, and openness. In this study, specific IPIP items were utilized to obtain data on two of the five personality traits, specifically extraversion and neuroticism. These traits in and of themselves are not suggestive of psychopathology and would be used to identify how normal, although possibly extreme, personality traits relate to problematic Facebook use.

In this study, participants responded to 20 IPIP items related to extraversion and 20 IPIP items related to neuroticism by choosing true or false. The IPIP administration instructions state that there are “no standardized procedure for administering IPIP items” (Goldberg, 1999, p. 1). Items can be administered “in any order.” Additionally, items can employ “binary true/false” scoring or a “rating scales with as many anchor points as they wish, with anchor descriptions of their choosing” (Goldberg, 1999, p. 1). The IPIP authors state that, “slight variations in administrative procedures do not have profound effects on substantive research results” and “the order in which items are presented generally does not matter very much. Whether one provides respondents with three or five or seven response options does not matter very much” (Goldberg, 1999, p. 1). This freedom of scoring is supported by Matell and Jacoby (1971) who suggested that reliability and validity function independently of the number of scale points contained in

a Likert rating scale. They contend that re-scoring multi-point response scales to dichotomous measure do not have a significant negative impact on reliability or validity (Matell & Jacoby, 1971). Additionally, Percy (1976) suggested, “since Likert scale measurement is concerned primarily with direction, utilization of a 2-point Likert scale realizes largely the same information as a multi-point Likert scale” (p. 147). Percy suggested, “Correlations of these data will reflect this fact because the basic monotone relationship has not been altered. By observing normal cautions with the data, there is no meaningful effect on the correlation matrix transformation as a result of the number of scale points utilized” (Percy, 1976, p. 147).

Once numbers are assigned for all of the items in the scale, the values for each item in the scale were summed to obtain the total scale scores. Half of the items are reversed scores. Higher scores indicate a higher level of extraversion or neuroticism (McCrae & John, 1992).

Research comparing the five broad domains in Costa and McCrae’s Neuroticism, Extroversion, Openness Personality Inventory (NEO-PI) and the corresponding IPIP scales measuring similar constructs found a coefficient α of .91 for both neuroticism and extraversion (Goldberg, 1999). A correlation coefficient of .93 was found between neuroticism items from the NEO-PI and corresponding IPIP items and a correlation coefficient of .88 was found between extraversion items from the NEO-PI Personality Inventory and corresponding IPIP items (Donnellan, Oswald, Baird, & Lucas, 2006). IPIP scales correlate between .60 and .75 and yield scale reliability between .75 and .85 (Baldasaro, Shanahan, & Bauer, 2013; Donnellan et al., 2006; Goldberg, 1999). The IPIP

extraversion items can be found in Appendix G of this document and the IPIP neuroticism items can be found in Appendix H of this document.

Procedures

Permission to proceed with the study was secured from the University Institutional Review Board. Participants were recruited through social media as well as from faculty, undergraduate, and graduate students through email and in-class announcements. Some student participants were offered extra credit as an incentive for participation. The study was described as focusing on personality traits associated with Facebook use. Individuals interested in participating were directed to a SurveyGizmo.com World Wide Web address where they could access the instruments online. Participants answered 108 questions. It took an average of 20.92 minutes for participants to complete the battery.

Participants were first provided an informed consent page warning that the transmission of survey data via the Internet is not secure and that complete confidentiality of the data can not be insured. However, participants were reminded that no identifying information was being collected and that confidentiality would be guaranteed once the data had been received by the researchers. Those who agreed to participate (agreement was indicated by clicking on text reading “I have read this page, and would like to take the survey”) were directed to a page inquiring about their country of residency. Participants indicating they were not U.S. residents were routed to a page stating only U.S. residents were eligible for participation. Participants indicating that they were U.S. residents, were provided the instruments, which included the BFAS, FBI, NPI-16, IPIP items related to extraversion and neuroticism, IAT, exploratory Facebook use questions,

and a short demographic information form. IAT items were presented in the order listed in the IAT manual (Young, 1998).

After completing the instruments and demographic information, participants were provided a debriefing statement that explained the purpose of the study and provided contact information for the researcher. Student participants were given the option of printing a “proof of participation” sheet if they were in a class with an instructor who offered extra credit. Because participants completed several forms and instruments, it was anticipated that fatigue, associated with the passage of time, might impact participant performance. To control for order effects on measurement of the constructs, the order of the instruments were randomized (Cozby, 2009). Additionally, to control for random responding, four items, which elicit specific responses from participants were included but were not used in the statistical analysis (Meade & Craig, 2012).

To insure that participants felt at ease about sharing sensitive information, participants were not asked to provide their name or other potentially identifying information, instead participants were identified using a code that was generated by SurveyGizmo. Additionally, SurveyGizmo did not collect IP addresses. The researcher did not attempt to identify participants. All data collected was held strictly confidential and no one, other than the researcher, was allowed access to data.

The survey was tested before opening it to participants. Fifteen of the researcher’s colleagues were asked to take the survey and provide feedback regarding ease of use, clarity of wording and directions, and survey layout. This feedback was used to make improvements to the survey. Additionally, this test was used to ensure that data were properly collected. Data collected during this test period were not used in the final data

analysis. There were eight responses in which the participants completed only part of the test battery. Due to the extent of missing data, the data associated with these partially completed surveys were not included in the final data analysis (Pigott, 2001).

CHAPTER THREE

RESULTS

Participant Pool Traits

Surveys were completed by a total of 295 participants. The ethnicity of the sample is as follows: 226 (76.6%) Caucasian, 40 (13.6%) Black/African American, 14 (4.7%) Hispanic, 11 (3.7%) Other/Multi Racial, 3 (1%) Native American/Alaska Native, and 1 (.3%) Asian/Pacific Islander. There were 212 (71.9%) female and 83 (28.1%) male participants. Initial participant traits were explored with the genders combined. Mean age is 37.68 ($SD = 15.60$ and the range is 18-76 years. The mean years of education is 14.56 ($SD = 2.48$). Based on data provided by subjects on the FBI, the mean number of hours spent on Facebook per day is 2.04 ($SD = 1.98$). The mean number of Facebook friends is 471.20 ($SD = 378.82$).

Gender

A Multivariate Analysis of Variance (MANOVA) was conducted to explore gender differences along demographic variables. There were statistically significant differences in age, $F(1, 293) = 26.23, p < .001$, with males ($M = 44.82, SD = 13.75$) being significantly older than females ($M = 34.89, SD = 15.42$). There were statistically significant differences in the number of Facebook friends, $F(1, 293) = 7.18, p < .01$, with females having significantly more Facebook friends ($M = 507.79, SD = 413.02$) than males ($M = 377.73, SD = 251.54$). There were no statistically significant differences between males ($M = 2.07, SD = 2.44$) and females ($M = 2.03, SD = 1.78$) in the number

of hours spent on Facebook per day, $F(1, 293) = .02, p = .88$. There were no statistically significant differences between females ($M = 14.70, SD = 2.54$) and males ($M = 14.22, SD = 2.30$) in years of education, $F(1, 293) = 2.26, p = .13$. The results are displayed in Table 2.

Table 2

Cronbach's Alpha, Means, and Standard Deviations for All Participants, Male, and Female Samples

Measure	All Participants			Male			Female		
	α	M	SD	α	M	SD	α	M	SD
Explore	.95	15.35	7.73	.99	19.81**	11.70	.85	13.60**	4.38
IPIP-E	.89	13.11	5.15	.89	13.75	4.26	.89	12.85	5.45
IPIP-N	.91	7.25	5.60	.95	8.80	6.37	.88	6.64*	5.16
BFAS	.90	10.78	5.01	.96	12.99**	6.34	.83	9.92**	4.09
NPI-16	.81	.34	.23	.88	.48	.28	.75	.29	.19
FBI	.88	3.19	.92	.93	2.90**	.99	.86	3.31*	.86
IAT	.91	15.08	12.79	.96	16.63	13.61	.87	14.48	12.43

Note. * $p < .05$ ** $p < .01$ Explore = Exploratory Facebook Use Questions; IPIP-E = International Personality Pool items related to extraversion; IPIP-N = International Personality Pool items related to neuroticism; BFAS = Bergen Facebook Addiction Scale; NPI = Narcissistic Personality Inventory-16; FBI = Facebook Intensity Scale; IAT = Internet Addiction Test.

A MANOVA was conducted to explore gender differences among the various measures. There was an overall significant difference between the genders, $F(12, 282) = 13.73$. Additionally, the Box's M is significant, but the assumptions were robust.

There were statistically significant differences between genders on Exploratory Facebook Use Questions, $F(1, 293) = 44.09, p < .001$, with females ($M = 13.60, SD = 4.38$) having significantly lower scores than males ($M = 19.81, SD = 11.70$). Females ($M = 6.64, SD = 5.16$) also have significantly lower IPIP neuroticism scores than males ($M = 8.80, SD = 6.37$), $F(1, 293) = 9.07, p < .01$. There were statistically significant differences between genders on the BFAS, $F(1, 293) = 24.21, p < .001$, with males ($M = 12.99, SD = 6.34$) having significantly higher scores than females ($M = 9.92, SD = 4.09$).

There were also statistically significant differences between males and females on the NPI-16, $F(1, 293) = 46.80, p < .001$, with females ($M = .29, SD = .19$) reporting significantly lower scores than males ($M = .48, SD = .28$). Females ($M = 3.31, SD = .86$) have significantly higher scores on the FBI, $F(1, 293) = 11.92, p < .01$, than males ($M = 2.90, SD = .99$). There were no statistically significant differences on the IAT, $F(1, 293) = 1.68, p = .20$, between females ($M = 14.48, SD = 12.43$) and males ($M = 16.63, SD = 13.61$). Lastly, there were no statistically significant differences between males ($M = 13.75, SD = 4.26$) and females ($M = 12.85, SD = 5.45$) on IPIP extraversion scores, $F(1, 293) = 1.80, p = .18$.

Hypothesis One

It was hypothesized that adult participants with higher levels of narcissism (higher NPI-16 scores) would also report higher levels of problematic Facebook use (higher Exploratory Facebook Use Questions, BFAS, and FBI scores). Specifically, (1a) those with higher level of narcissism (higher NPI-16 scores) would report higher levels of problematic Facebook use as reflected in higher Exploratory Facebook Use Question scores, (1b) those with higher levels of narcissism (higher NPI-16 scores) would report higher levels of problematic Facebook use as reflected in higher BFAS scores, and (1c) those with higher levels of narcissism (higher NPI-16 scores) would report higher levels of problematic Facebook use as reflected in higher FBI scores. To test this hypothesis, a Pearson correlation was computed for each sub-hypothesis.

As hypothesized in (1a), as scores on the NPI-16 ($M = .34, SD = .23$) increased, so did those on Exploratory Facebook Use Questions ($M = 15.35, SD = 7.73$), $r = .52, p < .01$. As hypothesized in (1b), there was a positive relationship between NPI-16 scores (M

= .34, $SD = .23$) and BFAS scores ($M = 10.78$, $SD = 5.01$), $r = .45$, $p < .01$. As hypothesized in (1c), as scores increased on the FBI ($M = 3.19$, $SD = .92$), they also slightly increased on the NPI-16 ($M = .34$, $SD = .23$), $r = .13$, $p < .05$. Overall, Hypothesis One was supported. The results are displayed in Table 3.

Table 3

Hypotheses 1, 2, 3, and 7: Intercorrelations for the NPI-16, Exploratory Facebook Use Questions, BFAS, IPIP-E, and IAT

Measure	1	2	3	4	5	6
1. NPI-16	-					
2. Explore	.52*	-				
3. BFAS	.45*	.83*	-			
4. FBI	.13*	.33*	n/a	-		
5. IPIP-E	n/a	.20*	.16*	.21*	-	
6. IAT	n/a	.58*	.60*	.33*	n/a	-

Note. * $p < .01$; NPI = Narcissistic Personality Inventory-16; Explore = Exploratory Facebook Use Questions; BFAS = Bergen Facebook Addiction Scale; FBI = Facebook Intensity Scale; IPIP-E = International Personality Pool items related to extraversion; IAT = Internet Addiction Test.

Hypothesis Two

It was hypothesized that adult participants with higher levels of extraversion (higher IPIP extraversion scores) would also have higher levels of problematic Facebook use (higher Exploratory Facebook Use Questions, BFAS, and FBI scores). Specifically, (2a) participants with higher levels of extraversion (higher IPIP extraversion scores) would also report higher level of endorsements of Exploratory Facebook Use Questions, (2b) participants with higher levels of extraversion (higher IPIP extraversion scores) would also yield higher BFAS scores, and (2c) participants with higher levels of extraversion (higher IPIP extraversion scores) would also yield higher FBI scores. To test this hypothesis, a Pearson correlation was computed for each sub-hypothesis. The results are displayed in Table 3.

As hypothesized in (2a), as IPIP extraversion scores increased ($M = 13.11$, $SD = 5.15$), so did Exploratory Facebook Use Questions ($M = 15.35$, $SD = 7.73$), $r = .20$, $p < .01$. As hypothesized in (2b), as levels of extraversion (IPIP extraversion scores) increase ($M = 13.11$, $SD = 5.15$), so did BFAS scores ($M = 10.78$, $SD = 5.01$), $r = .16$, $p < .01$. As hypothesized in (2c), as FBI scores increased ($M = 3.19$, $SD = .92$) so did IPIP extraversion scores ($M = 13.11$, $SD = 5.15$), $r = .21$, $p < .01$. Overall, these moderate positive correlations provide confirmation for Hypothesis Two.

Hypothesis Three

It was hypothesized that participants with higher levels of problematic Internet use (higher IAT scores) would also report higher levels of problematic Facebook use (higher Exploratory Facebook Use Questions, BFAS, and FBI scores). Specifically, (3a) participants with higher levels of problematic Internet use (higher IAT scores) would also report higher level of endorsements of Exploratory Facebook Use Questions, (3b) participants with higher levels of problematic Internet use (higher IAT scores) would also yield higher BFAS scores, and (3c) participants with higher levels of problematic Internet use (higher IAT scores) would be associated with higher FBI scores. To test this hypothesis, a Pearson correlation was computed for each sub-hypothesis. The results are presented in Table 3.

As hypothesized in (3a), as participants indicated increased problematic Internet use (IAT scores) ($M = 15.08$, $SD = 12.79$), they also endorsed higher levels of Exploratory Facebook Use Questions ($M = 15.35$, $SD = 7.73$), $r = .58$, $p < .01$. As hypothesized in (3b), as participants indicated increased problematic Internet use (IAT scores) ($M = 15.08$, $SD = 12.79$), they also endorsed higher levels of problematic Facebook use (BFAS

scores) ($M = 10.78$, $SD = 5.01$), $r = .60$, $p < .01$. As hypothesized in (3c), as participants indicated increased problematic Internet use (IAT scores) ($M = 15.08$, $SD = 12.79$), they also endorsed higher levels of problematic Facebook use (FBI scores) ($M = 3.19$, $SD = .92$), $r = .33$, $p < .01$. Overall, these moderate positive correlations provide confirmation of Hypothesis Three.

Hypothesis Four

It was hypothesized that, after the variance associated with problematic Internet use (IAT scores) has been accounted for, narcissism (NPI-16 scores), extraversion (IPIP extraversion scores), and neuroticism (IPIP neuroticism scores) would account for significantly more variance in problematic Facebook use (BFAS scores) for males than for females. To test this hypothesis, a hierarchical regression was computed.

The hierarchical regression revealed that in the first step, for males, the IAT explained a significant amount of variance in problematic Facebook use, $R^2 = .39$, $F(1, 81) = 51.88$, $p < .01$. In step 2, for males, Narcissism (NPI-16 scores), neuroticism (IPIP neuroticism scores), and extraversion (IPIP extraversion scores) contribute significantly to the amount of variance explained in problematic Facebook use, $\Delta R^2 = .24$, $\Delta F(3, 78) = 16.36$, $p < .01$. The hierarchical regression revealed that in the first step, for females, the IAT explained a significant amount of variance in problematic Facebook use, $R^2 = .36$, $F(1, 210) = 116.08$, $p < .01$. In step 2, for females, Narcissism (NPI-16 scores), neuroticism (IPIP neuroticism scores), and extraversion (IPIP extraversion scores) did not contribute significantly to the amount of variance explained in problematic Facebook

use, $\Delta R^2 = .02$, $\Delta F(3, 207) = 2.59$, $p = .05$. In contrast the findings for males were significant. Some support was found for hypothesis four. The results are displayed in Table 4.

Table 4

Hypothesis 4: Hierarchical Regression Predicting Problematic Facebook Use From Personality Variables in Females and Males

Males			
	<i>B</i>	<i>SE B</i>	<i>B</i>
Step 1			
Constant	8.15	.87	
IAT	.29	.04	.63
Step 2			
Constant	4.27	1.52	
IAT	.14	.04	.31
NPI-16	5.36	2.67	.24
IPIP-E	.04	.13	.02
IPIP-N	.37	.10	.37
Females			
	<i>B</i>	<i>SE B</i>	<i>B</i>
Step 1			
Constant	7.08	.35	
IAT	.20	.02	.60
Step 2			
Constant	5.30	.75	
IAT	.18	.02	.56
NPI-16	1.23	1.34	.06
IPIP-E	.08	.05	.11
IPIP-N	.09	.05	.11

Note. Males: $R^2 = .39$ for Step 1, $\Delta R^2 = .24$ for Step 2 ($p < .01$). Females: $R^2 = .36$ for Step 1, $\Delta R^2 = .02$ for Step 2 ($p = .05$); IPIP-E = International Personality Item Pool related to extraversion; IPIP-N = International Personality Item Pool related to neuroticism; NPI = Narcissistic Personality Inventory-16.

Hypothesis Five

It was hypothesized that problematic Facebook use (BFAS and FBI scores) would be associated with three personality traits: narcissism (NPI-16 scores), extraversion (IPIP extraversion scores), and neuroticism (IPIP neuroticism scores). Moreover, narcissism

(NPI-16 scores) would account for the greatest variance, followed by extraversion (IPIP extraversion scores) and neuroticism (IPIP neuroticism scores), respectively, after the variance associated with gender has been accounted for. To test this hypothesis, a hierarchical regression was computed. The results are presented in Table 5.

Table 5

Hypothesis 5: Hierarchical Regression Analysis Predicting Personality Variables With Problematic Facebook Use While Controlling for Gender

BFAS			
	<i>B</i>	<i>SE B</i>	<i>B</i>
Step 1			
Constant	6.84	.85	
Gender	3.07	.62	.28
Step 2			
Constant	3.79	.97	
Gender	1.20	.57	.11
NPI-16	5.24	1.31	.24
IPIP-E	.07	.05	.08
IPIP-N	.37	.05	.42
FBI			
	<i>B</i>	<i>SE B</i>	<i>B</i>
Step 1			
Constant	3.71	.16	
Gender	-.40	.12	-.20
Step 2			
Constant	3.13	.21	
Gender	-.56	.12	-.27
NPI-16	.35	.28	.09
IPIP-E	.04	.01	.20
IPIP-N	.03	.01	.16

Note. $R^2 = .08$ for Step 1, $\Delta R^2 = .28$ for Step 2 ($p < .01$); IPIP-E = International Personality Pool items related to extraversion; IPIP-N = International Personality Pool items related to neuroticism; NPI = Narcissistic Personality Inventory-16.

For each model, with BFAS scores as the dependent variable, the change in both R and R^2 were significant. In the first step, gender was a significant predictor of BFAS scores, $F(1, 293) = 24.21, p < .001$. In the second step, NPI-16 and IPIP extraversion and neuroticism scores collectively were a significant positive predictor of BFAS scores, $F(3,$

290) = 42.65, $p < .001$. However, the hypothesis for the BFAS was not supported, as narcissism did not account for the greatest variance. Further, extraversion was not significant.

Each model with FBI scores as the dependent variable found significant changes in both R and R^2 . In the first step, gender was a significant predictor of FBI scores, $F(1, 293) = 11.92, p < .01$. In the second model, NPI-16 and IPIP neuroticism and extraversion scores were added and they collectively were a significant positive predictor of FBI scores, $F(3, 290) = 9.63, p < .001$. NPI-16 and IPIP neuroticism and extraversion scores were a stronger predictor of FBI scores than gender. The hypothesis for the FBI was not supported, as narcissism was not significant.

Hypothesis Six

It was hypothesized that narcissism (NPI-16 scores), extraversion (IPIP extraversion scores), and neuroticism (IPIP neuroticism scores) would still account for significant variance in problematic Facebook use (BFAS scores) after the variance associated with problematic Internet use (IAT scores) has been accounted for. To test this hypothesis, a hierarchical regression was computed.

For each model, with BFAS scores as the dependent variable, IAT scores were a significant predictor of problematic Facebook use (BFAS scores), $F(1, 293) = 160.61, p < .001$. When NPI-16 scores, IPIP extraversion scores, and IPIP neuroticism scores were added in the second step the change R and R^2 was significant. ($F(4, 290) = 26.63, p < .001$). Overall, the hypothesis was supported. Results for the model are presented in Table 6.

Table 6

Hypothesis 6: Hierarchical Regression Analysis Predicting Personality Variables With Problematic Facebook Use

	<i>B</i>	<i>SE B</i>	<i>B</i>
Step 1			
Constant	7.26	.36	
IAT	.23	.02	.60
Step 2			
Constant	4.01	.67	
IAT	.17	.02	.43
NPI-16	5.12	1.10	.24
IPIP-E	.07	.05	.07
IPIP-N	.21	.05	.24

Note. $R^2 = .35$ for Step 1, $\Delta R^2 = .14$ for Step 2 ($p < .01$); IPIP-E = International Personality Item Pool related to extraversion; IPIP-N = International Personality Item Pool related to neuroticism; NPI = Narcissistic Personality Inventory-16.

Hypothesis Seven

It was hypothesized that participants with higher Exploratory Facebook Use Question scores would also report higher levels of problematic Facebook use (higher BFAS and FBI scores). Specifically, (7a) those with higher Exploratory Facebook Use Question scores would also report higher BFAS scores and (7b) those with higher Exploratory Facebook Use Question scores would also report higher FBI scores. To test this hypothesis, a Pearson correlation was computed for each sub-hypothesis. The results are presented in Table 3.

As hypothesized in (7a), increased Exploratory Facebook Use scores ($M = 15.35$, $SD = 7.73$) were related to increased problematic Facebook use (BFAS scores) ($M = 10.78$, $SD = 5.01$), $r = .83$, $p < .01$. As hypothesized in (7b) problematic Facebook use (Exploratory Facebook Use Questions scores) ($M = 15.35$, $SD = 7.73$) was positively associated with FBI scores ($M = 3.19$, $SD = .92$), $r = .33$, $p < .01$. Overall, the pattern of positive correlations supports Hypothesis Seven.

CHAPTER FOUR

DISCUSSION

Social networking sites, such as Facebook, continue to grow in popularity because they provide a place to relate and interact with others (Hinz et al., 2011; Manago et al., 2015; Nadkarni & Hofmann, 2012; Skiera et al., 2015). With this continued popularity, the demographic traits of users change with the passage of time and the increasing availability of a wide variety of social networking sites (VanDam & VanDeVelden, 2015). A goal of this study was to expand on what is currently known about Facebook use and its users.

Regarding the number of Facebook friends reported by participants, the current study's finding differs from prior findings. In this study, participants reported having an average number of 471.20 Facebook friends, although prior studies report from 120 to 350 Facebook friends on average (Hinz, Skiera, Barrot, & Becker, 2011; Nadkarni & Hofmann, 2012). This is possibly due to Facebook users accumulating new Facebook friends over time. Further research is needed to determine if this is an isolated finding or a trend among Facebook users.

The average age of participants in this study was 37.68, which is over a decade older than average participant ages in prior studies (Hinz et al., 2011; Nadkarni & Hofmann, 2012). This is likely due to the growing use of the Internet and social networking sites by older adults (Kwon et al., 2009; Mitchell, 2000) and also possibly the

aging of the original users. Older adults are discovering the beneficial aspects of Internet use, such as increased access to social interaction, greater opportunity for interaction with younger generations, and the maintainance of relationships regardless of impaired mobility and great distance (Kwon et al., 2009; Mitchell, 2000; Nef et al., 2013; VanVolkom, Stapley, & Amaturro, 2014).

Although results from the present study differed from prior research in these respects, this was not the case regarding time spent on Facebook. The average number of hours spent on Facebook per week (2.04) reported in this study were similar to other studies that reported participants spent from 2 to 3 hours on Facebook each week (Hinz et al., 2011; Nadkarni & Hofmann, 2012). Although Internet access is growing, this seeming lack of increase regarding time spent on Facebook was possibly due to growing access to a variety of new social networking sites or simply no increase in leisure time.

In the current study, there were statistically significant differences in age among males and females, with males being significantly older than females. However, there were no statistically significant differences in years of education among males and females. In the present study, females reported having significantly more Facebook friends than males. However, there was no statistically significant difference in the number of hours spent on Facebook per day reported by males and females. Regarding gender differences in endorsement of this study's personality measures, there were statistically significant differences between males and females in endorsement of IPIP neuroticism scores and NPI-16 scores, with females having significantly lower scores than males. There were no statistically significant differences in the IPIP extraversion scores of males and females.

The majority of prior research on gender differences in problematic Facebook use has found that females tend to use Facebook in problematic ways more often than males (Koc & Gulyagci, 2013; Thompson & Loughheed, 2012; Wolniczak et al., 2013; Yesil, 2014). In the current study, results were mixed when comparing score of males and females on measures of problematic Facebook use. Females scored lower than males on Exploratory Facebook Use Questions and the BFAS. However on the FBI, females scored higher than males. These mixed results may be due to males and females having differing motivations for using Facebook and each of the measures conceptualizing problematic Facebook use in different ways. Women tend to employ Facebook to socialize, but men tend to use it for entertainment (Skiera et al., 2015).

Hypothesis One

A goal of the present study was to better understand which personality traits were associated with problematic Facebook use. As hypothesized, higher levels of narcissism (higher NPI-16 scores) were found to be associated with higher scores on two measures of problematic Facebook use (BFAS and FBI) and with higher positive endorsement of Exploratory Facebook Use Questions based on the DSM-5 proposed criteria for Internet Gaming Disorder. These results suggest that individuals with narcissistic personality features are at a higher risk of using Facebook in problematic ways. Similarly, LaBarbera, La Paglia, and Valsavoia (2009) found that people with narcissistic tendencies were prone to use social networking sites in a problematic way. Additionally, other researchers have linked problematic Facebook use to narcissism (Garcia & Sikstrom, 2014; Kapidzic, 2013; Kim et al., 2006; Weinstein & Lejoyeux, 2010; Wilson et al., 2010). Narcissistic individuals tend to consider themselves particularly special (Buss & Chiodo, 1991;

Emmons, 1984; John & Robins, 1994; Tunnell, 1984), be boastful, and eager to talk about themselves (Wallace & Baumeister, 2002; Young & Pinsky, 2006). Social networking sites, such as Facebook, provide individuals with narcissistic personality traits an audience to gain attention and admiration (Barker, 2009; Christakis & Moreno, 2009; Wieland, 2005).

Hypothesis Two

Overall, this hypothesis was only slightly supported due to weak positive correlations; however, as hypothesized, participants with higher levels of extraversion (higher IPIP extraversion scores) reported higher levels of problematic Facebook use via one measure of problematic Facebook use (BFAS) and higher positive endorsements of Exploratory Facebook Use Questions based on based on the DSM-5 proposed criteria for Internet Gaming Disorder. Although researchers have found that persons high in extraversion are more likely to utilize Facebook (Caci et al., 2014; Kao & Craigie, 2014; Nadkarni & Hofmann, 2012; Seidman, 2013; Wilson et al., 2010) and some have deemed extraversion to be the most important personality trait in predicting social network site usage (Correa et al., 2010; Kuss & Griffiths, 2011), others have found the overall support for a link between extraversion and problematic Facebook use to be mixed (Hart et al., 2015).

Both this study and Andreassen et al. (2010) employed the BFAS and found that BFAS scores were positively related to extraversion. The current study found only weak positive support for a link between extraversion and problematic Facebook. Therefore, researchers should conduct additional studies to understand the nature of the association between extraversion and Facebook use. Additionally, researchers should consider

developing new measures, or refining current measures, to further explicate the nature of the association between extraversion and Facebook use.

Hypothesis Three

As hypothesized, participants with higher levels of problematic Internet use (higher IAT scores) also reported higher levels of problematic Facebook use (higher level of endorsements of Exploratory Facebook Use Questions, higher BFAS scores, and higher FBI scores). Research has shown that addiction is not exclusive to chemical substances, but also manifests as habitual behaviors, such as problematic Internet and Facebook use (Griffiths, 2000; Holden, 1997; Young, 1998c, 1999). Research further suggests that problematic Internet use most frequently occurs in the context of interactive online applications, such as Facebook (Czincz & Hechanova, 2009; Fioravanti et al., 2012). Overall, the moderate positive correlations found in support of Hypothesis Three provide confirmation and suggest that these two behavioral addictions (problematic Facebook use and problematic Internet use) may be closely linked. This could be due to the fact that the available activities on Facebook have expanded beyond social networking, sending messages, and posting pictures; and Facebook users can now play online games, gamble, and watch videos (Griffiths, 2005, 2012; King et al., 2010; Kuss & Griffiths, 2011). It remains for future research to delineate the relationship between problematic Internet and problematic Facebook use.

Hypothesis Four

The current study found that, after the variance associated with problematic Internet use had been accounted for, narcissism, extraversion, and neuroticism predicted problematic Facebook use in males, but not females. As is the case with the current study,

prior research on gender and problematic Facebook use has produced mixed results. Although Cam and Isbulan (2012) found males to be more addicted to Facebook than females, the majority of similar research has found females to be more addicted to Facebook than males (Koc & Gulyagci, 2013; Thompson & Loughheed, 2012; Wolniczak et al., 2013; Yesil, 2014). Research on gender differences related to other behavioral addictions is also mixed. Regarding gambling and video-game use, males tend to exhibit more problematic behavior than females (Mentzoni et al., 2011; Molde et al., 2009). However regarding mobile-phone use, females engage in more problematic use than males (Takao et al., 2009). It has been theorized that these differences exist because males tend to become addicted to solitary behaviors, but women tend to become addicted to behaviors involving social interaction (Andreassen et al., 2012). In this study, the results suggest narcissism, extraversion, and neuroticism predict problematic Facebook use in males, but not females.

Hypothesis Five

Overall, Hypothesis Five was not supported, as results were mixed. Gender was a significant predictor of BFAS scores. Additionally, NPI-16 and IPIP extraversion and neuroticism scores collectively were significant positive predictors of BFAS scores. However, as hypothesized regarding the BFAS, narcissism did not account for the largest variance and extraversion was not significant.

Regarding FBI scores, gender was a significant predictor. Additionally, NPI-16 and IPIP neuroticism and extraversion scores, collectively, were significant positive predictors of FBI scores. However, as hypothesized regarding the FBI narcissism was not a significant predictor.

Both the BFAS and FBI were designed to measure problematic Facebook use; however, each measure conceptualizes problematic Facebook use differently. BFAS items address each of the six core elements of addiction (salience, mood modification, tolerance, withdrawal, conflict, and relapse), but the FBI was developed to measure Facebook usage beyond frequency and duration by incorporating questions related to emotional connectedness to the site and integration into individuals' daily activities. It is possible that these contrasting approaches to the conceptualization of problematic Facebook use contributed to the differences in this study's findings regarding the BFAS and FBI.

The finding that problematic Facebook use, as measured by the BFAS, was significantly predicted by narcissism is consistent with research that has found that social networking sites, such as Facebook, provide narcissistic individuals with an audience and platform to gain admiration (Barker, 2009; Christakis & Moreno, 2009; Wieland, 2005). Regarding the BFAS, the findings supportive of Hypothesis Five were likely due to narcissistic individuals establishing social contacts as a source of self-enhancement (Campbell et al., 2002) and because social networking sites, such as Facebook, provide narcissistic individuals with the shallow relationships they desire for self-aggrandizement (Buffardi & Campbell, 2008; Mehdizadeh, 2010; Vazire et al., 2008).

The finding that problematic Facebook use was significantly predicted by neuroticism was consistent with research findings that neurotic individuals are anxious about self-presentation and seek acceptance and social contact through Facebook. This is likely due to Facebook providing them with opportunities to connect with others and gain support under circumstances in which they can tightly control the information and present

an idealized version of themselves (Beard, 2002; Caci et al., 2014; Chou et al., 2005; Cooper et al., 2010; Fioravanti et al., 2012; Kao & Craigie, 2014; Lahey, 2009; Seidman, 2013).

The finding that problematic Facebook use, as measured by the FBI, was significantly predicted by extraversion is consistent with research finding that Facebook indirectly meets the extraverts' need for stimulation and social interaction (Correa et al., 2010; Gosling et al., 2003). This is likely due to their naturally low arousal that requires more stimulation before they are sated and increases the likelihood that extraverts will engage in maladaptive behaviors (Costa & McCrae, 1992a; Morahan-Martin, 2005) such as problematic Facebook use.

Hypothesis Six

As hypothesized, narcissism (NPI-16 scores), extraversion (IPIP extraversion scores), and neuroticism (IPIP neuroticism scores) collectively accounted for variance in problematic Facebook use (BFAS scores) after the variance associated with problematic Internet use (IAT scores) was accounted for. Prior research has been conducted on problematic Facebook use and the personality traits of narcissism, extraversion, and neuroticism. The current study adds to prior research because it explores problematic Facebook use by predicting it from personality factors after the variance associated with problematic Internet use has been accounted for. This finding is consistent with research that has shown that personality influences Facebook use and that social networking habits are influenced by overall personality (Goodmon et al., 2014; Ivcevic & Ambady, 2012; Kapidzic, 2013; Kosinski et al., 2013). Also in support of the findings of Hypothesis Six are research finding that Facebook use is a particularly rewarding for persons with a high

level of any of the personality traits of narcissism, extraversion, or neuroticism (Fioravanti et al., 2012; Kao & Craigie, 2014; Seidman, 2013).

Hypothesis Seven

As hypothesized, positive endorsement of the Exploratory Facebook Use Questions were associated with higher scores on two measures of problematic Facebook use (BFAS and FBI). As APA has encouraged further study of Internet gaming disorder (APA, 2013), these findings support the need for continued research regarding the proposed diagnostic criteria for the disorder. Future researchers may want to develop instruments based on the APA proposed criteria for Internet Gaming Disorder. Additionally, the study of the possible subtypes of Internet Gaming Disorder (i.e., problematic Facebook and problematic social networking use) provide opportunities for furthering understanding and is worthy of future research.

General Discussion

Due to the controversy that exists within the field of psychology regarding whether problematic Internet use should be included as a diagnoses in the DSM (APA, 2013; Pies, 2009), the APA has encouraged research in the area of Internet use (APA, 2013). Therefore, a goal of this study was to better understand problematic Facebook use, a subset of problematic Internet use and add to research conducted before publication of the DSM-5. Specifically, the current study attempted to determine which personality traits were associated with problematic Facebook use. This study included Exploratory Facebook Use Questions based on the DSM-5 proposed diagnostic criteria for Internet Gaming Disorder. Although not an attempt to develop a new scale, these questions were included to compare the Exploratory Facebook Use Questions analogous to the proposed

DSM-5 diagnostic criteria for Internet Gaming Disorder to current measures of problematic Facebook use. Consistent with recent research, the results of this study were mixed. If future research continues to produce mixed results, perhaps it is because there is no clear answer regarding the personality traits related to problematic Facebook use or possibly new measures or methods are necessary to reach a clear consensus.

Limitations

There are important limitations to this study. The first concerns generalizing the present results to the general public, which is problematic. Regarding Caucasian, African American, and Native American participants, the current study's sample was very close to that presented in 2013 U.S. Census Bureau statistics (U.S. Census Bureau, 2013).

However, in this study Hispanics/Latinos and Asian/Pacific Islanders were underrepresented. The 2013 U.S. Census reports that 17.1% of the U.S. population was Hispanic/Latino and 5% is Asian (U.S. Census Bureau, 2013). In the current study, only 4.7% of the sample identified themselves as Hispanic/Latino and .3% reported themselves as Asian/Pacific Islander.

This study presents limitations regarding gender. The 2013 U.S. Census statistics report that 50.8% of the U.S. population is female (U.S. Census Bureau, 2013). In the current study, males were underrepresented with 71.9% of the sample identifying themselves as females. Although at variance with the general population, it is possible that this reflects the demographics of the Internet users. Future researchers may wish to consider the demographics of Internet users.

There are also limitations regarding level of education. The United Nations Human Development Report lists the average years of education attained by persons

living in the U.S. in 2013 to be 12.9 years (Barro & Lee, 2013). In the current study, the average years of education reported by participants was 14.56, which does not reflect the average years of education (12.9) of the U.S. general population. This is likely due to participants being recruited through social media as well as from faculty, undergraduate, and graduate students at a university where people are minimally at or just below the national average, through email and in-class announcements. Higher levels of narcissism have been found in individuals with higher educational attainment (Piff, 2014). Therefore, the higher level of education of the participant pool may have influenced this study's findings regarding narcissism.

Although certainly not unique to this study, another limitation concerns the use of self-report measures. Fan et al. (2006) warn that use of self-report measures may cause some distortion of results. These distortions may be due to the tendency of subjects to report what they believe the researcher expects, variability in subjects' ability to accurately recall past behavior, and the tendency of subjects to engage in positive impression management. Although of concern, Fan et al. (2006) did not find possible distortions to seriously bias results. Additionally, Austin and colleagues (1998) found accurate reporting on self-report measures to be influenced by participant conscientiousness, a personality trait not measured in the present study (Austin, Gibson, Deary, McGregor, & Dent, 1998). Although self-report measures typically assess these constructs, the variance that is ascribed to the measurement technique, rather than to the constructs the instruments are presupposed to represent (common variance), may have served to inflate correlations.

Lastly, the study has limitations regarding the use of Exploratory Facebook Use Questions. Analysis of the Exploratory Facebook Use Questions provides good evidence of internal consistency; however, for the purposes of the current study, use of this questionnaire was exploratory in nature and development of a new instrument was not a goal of this study. Therefore, it is recommended that this questionnaire be viewed as a tentative research measure of problematic Facebook use, worthy of further study.

Implications for Future Research

Because current social networking users likely differ from past users, continued research is needed in this area (VanDam & VanDeVelden, 2015). One of the vicissitudes of Internet research is the short shelf life of findings. The current study investigates Facebook use as a unitary phenomenon. It is recommended that future research explore the specific ways that users spend their time when on social networking sites (Hart et al., 2015).

Hart et al. (2015) suggested that research in this area focus less on behavioral variables. The current study explores some behavioral variables, such as the time spent on Facebook, but primarily focuses on personality variables. This study, as do many other studies, focused on the Five Factor Model (FFM) of personality; however, for future research, it has been suggested that personality traits outside of the FFM, such as the HEXACO personality dimensions, be included (Hart et al., 2015).

Only participants who indicated that they were U.S. residents were able to complete the measures of this study. Researchers are cautioned against generalizing findings to Facebook users of the U.S. to those in other countries since there might be important cultural differences that potentially influence findings (Vasalou, Joinson, &

Courvoisier, 2010). Additionally, this study's participants were self-reported Facebook users. Hargittai (2008) cautions researchers against generalizing results based on users of one site to others. Therefore, future research may want to include users of various social networking sites and users from different countries to see if the present results generalize.

Wilson, Gosling, and Graham (2012) identify a number of benefits to studying behaviors via Facebook, including the ability to study behaviors that are difficult to assess using other means. The present study adds to our understanding of personality and problematic Facebook use and further demonstrates the usefulness of Facebook as a valuable means of research. However, future research is needed to clarify and validate the present study's findings.

Implications for Practice

Research suggests that individuals with problematic Internet (Aboujaoude et al., 2006; Ahmad, 2011) and Facebook (Pies, 2009) use are at significant risk for psychological problems and may benefit from treatment. Although the Internet offers beneficial aspects (Kwon et al., 2009; Mitchell, 2000; Nef et al., 2013), users should be encouraged to keep a sense of balance and learn to use the Internet (Mitchell, 2000) and social networking sites (Nef et al., 2013), such as Facebook, in a healthy way.

The results of this study suggest that specific personality traits were related to problematic Facebook use. Additionally, problem solving styles, the way in which we interact with our environment, and communication styles vary by personality traits (Taber, Leibert, & Agaskar, 2011). Therefore, it may be beneficial to tailor therapeutic interventions based on these personality traits. For example, presenting extroverted clients

with many possibilities will likely excite and motivate, while presenting clients high in neuroticism with many possibilities will likely frighten and paralyze.

The present study suggests that the personality trait of narcissism was associated with problematic Facebook use. With this in mind, mental health professionals may find it beneficial to screen clients with problematic Facebook use for narcissism. For example, when working with clients on problematic Facebook use it would be beneficial to know whether narcissistic personality features are also present because, if present, it may be more therapeutically advantageous to point out the negative impact that their Facebook use has on them directly, rather than the negative impact that their Facebook use has on their relationships and others.

Although the support for a link between extraversion and problematic Facebook use was mixed (Hart et al., 2015), identification of extraverted clients may also prompt further inquiry regarding social networking use. Additionally, the personality traits of narcissism, extraversion, and neuroticism appear to more strongly predict problematic Facebook use in males than in females. Therefore, it may be beneficial for treatment providers to pay close attention for signs of problematic Facebook use in males possessing these personality traits.

Conclusion

With growing Internet use, social networking sites, such as Facebook, also grow in popularity (Hinz et al., 2011; Manago et al., 2015; Nadkarni & Hofmann, 2012; Skiera et al., 2015). Because of this growing use, the authors of the DSM-5 identified Internet Gaming Disorder, also referred to as Internet Use Disorder and Internet Addiction, as a topic in need of continued research (APA, 2013). The author of this study chose to follow

the suggestion of the DSM authors by studying problematic Facebook use, a subset of problematic Internet use.

Although there is disagreement regarding the validity of the construct of behavioral addictions, such as Internet Addiction (Leung, 2004; Marks, 1990; Tsai et al., 2009), some researchers have delineated indicators of problematic Internet use, including development of tolerance, excessive time spent on the Internet, distress, irritability, spending more time on the Internet than planned, giving up important activities to spend time on the Internet, continued use regardless of problems caused in major life areas, unsuccessful attempts to cut down on use, and experiencing withdrawal (Beard & Wolf, 2001; Griffiths, 1998; Panayides & Walker, 2012; Young & Rodgers, 1998b). Also compelling, research has found that some Facebook users report symptoms similar to those of problematic Internet users (Thompson & Lougheed, 2012).

The current study was new in that it included an Exploratory Facebook Use Questionnaire created by the researcher, based on the DSM-5 proposed criteria for Internet Gaming Disorder. The present study adds to prior research by concurrently exploring the relative strength of the relationship between three personality dimensions and problematic Facebook use and by predicting problematic Facebook use from personality factors after the variance associated with problematic Internet use was accounted for. However, continued research is needed to understand better the full nature of problematic Internet and Facebook use and to determine if the phenomenon of problematic Internet use and/or subsets (i.e., problematic Facebook use) warrant DSM diagnostic inclusion (APA, 2013; Pies, 2009).

APPENDIX A
DEMOGRAPHIC FORM

DEMOGRAPHIC FORM

- 1) How old are you? _____
- 2) With which gender do you identify? _____
- 3) What is the highest level of education have you completed? _____
- 4) What is your ethnicity? _____

APPENDIX B
EXPLORATORY FACEBOOK USE QUESTIONS

EXPLORATORY FACEBOOK USE QUESTIONS

Answer the follow questions by using this scale:

1 = Does not apply 3 = Occasionally 5 = Often
2 = Rarely 4 = Frequently 6 = Always

- 1) I feel preoccupied with being on Facebook. _____
- 2) I experience withdrawal symptoms (irritability, anxiety, and sadness) when unable to use Facebook. _____
- 3) I find myself spending an increasing amount of time on Facebook. _____
- 4) I have tried to better control my Facebook use, but have been unsuccessful. _____
- 5) I am less interested in previous hobbies and entertainment as a result of my Facebook use. _____
- 6) I continue to use Facebook despite my use causing problems. _____
- 7) I have been untruthful with others regarding my Facebook use. _____
- 8) I use Facebook to escape or relieve feelings of guilt, anxiety, or helplessness. _____
- 9) My Facebook use jeopardized or caused the loss of a relationship, job, or educational opportunity. _____

APPENDIX C

BERGEN FACEBOOK ADDICTION SCALE ITEMS

BERGEN FACEBOOK ADDICTION SCALE ITEMS

Give one the following 5 responses to each one:

1 = Very rarely 2 = Rarely 3 = Sometime 4 = Often 5 = Very often

- 1) You spend a lot of time thinking about Facebook or planning how to use it. _____
- 2) You feel an urge to use Facebook more and more. _____
- 3) You use Facebook in order to forget about personal problems. _____
- 4) You have tried to cut down on the use of Facebook without success. _____
- 5) You become restless or troubled if you are prohibited from using Facebook. _____
- 6) You use Facebook so much that it has had a negative impact on your job/studies. _____

Scoring “often” or “very often” on at least four of the six items suggests the respondent is addicted to Facebook.

APPENDIX D

FACEBOOK INTENSITY SCALE ITEMS

FACEBOOK INTENSITY SCALE ITEMS

Answer questions 1-6 by using this scale:

1 = Strongly disagree 3 = Neither disagree/agree 5 = Strongly agree
2 = Disagree 4 = Agree

- 1) Facebook is part of my everyday activity. _____
- 2) I am proud to tell people I'm on Facebook. _____
- 3) Facebook has become part of my daily routine. _____
- 4) I feel out of touch when I haven't logged onto Facebook for a while. _____
- 5) I feel I am part of the Facebook community. _____
- 6) I would be sorry if Facebook shut down. _____
- 7) Approximately how many total Facebook friends do you have? _____
- 8) In the past week, on average, approximately how much time per day have you spent actively using Facebook? _____

APPENDIX E
INTERNET ADDICTION TEST ITEMS

INTERNET ADDICTION TEST ITEMS

Answer the following questions by using this scale:

0 = Does not apply 2 = Occasionally 4 = Often
 1 = Rarely 3 = Frequently 5 = Always

- 1) How often do you find that you stay online longer than you intended? _____
- 2) How often do you neglect household chores to spend more time online? _____
- 3) Do you prefer the excitement of the Internet to intimacy with your partner? _____
- 4) How often do you form new relationships with fellow on online users? _____
- 5) How often do others in your life complain to you about the amount of time you spend online? _____
- 6) How often do your grades or schoolwork suffer because of the amount of time you spend online? _____
- 7) How often do you check your e-mail before something else that you need to do? _____
- 8) Does your job performance or productivity suffer because of the Internet? _____
- 9) How often do you become defensive or secretive when anyone asks you what you do online? _____
- 10) How often do you block out disturbing thoughts about your life with soothing thoughts of the Internet? _____
- 11) How often do you find yourself anticipating when you will go online again? _____
- 12) How often do you fear that life without the Internet would be boring, empty, and joyless? _____
- 13) How often do you snap, yell, or act annoyed if someone bothers you while you are online? _____
- 14) How often do you lose sleep due to late-night logins? _____
- 15) How often do you feel preoccupied with the Internet when off-line, or fantasize about being online? _____
- 16) How often do you find yourself saying "just a few more minutes" when online? _____
- 17) Do you try to cut down the amount of time you spent online and fail? _____
- 18) How often do you try to hide how long you've been online? _____
- 19) How often do you choose to spend more time online over going out with others? _____
- 20) How often do you feel depressed, moody, or nervous when you are off-line, which goes away once you are back online? _____

APPENDIX F

NARCISSISTIC PERSONALITY INVENTORY-16 ITEMS

NARCISSISTIC PERSONALITY INVENTORY-16 ITEMS

Choose one of the two statements that most accurately describes you.

- 1) _____ When people compliment me, I sometimes get embarrassed.
 _____ I know that I am good because everybody keeps telling me so.
- 2) _____ I prefer to blend in with the crowd.
 _____ I like to be the center of attention.
- 3) _____ I am no better or worse than most people.
 _____ I think I am a special person.
- 4) _____ I like to have authority over other people.
 _____ I don't mind following orders.
- 5) _____ I find it easy to manipulate people.
 _____ I don't like it when I find myself manipulating people.
- 6) _____ I insist upon getting the respect that is due me.
 _____ I usually get the respect that I deserve.
- 7) _____ I try not to be a show-off.
 _____ I will usually show off if I get the chance.
- 8) _____ I always know what I am doing.
 _____ Sometimes I am not sure of what I am doing.
- 9) _____ Sometimes I tell good stories.
 _____ Everybody likes to hear my stories.
- 10) _____ I expect a great deal from other people.
 _____ I like to do things for other people.
- 11) _____ I really like to be the center of attention.
 _____ It makes me uncomfortable to be the center of attention.
- 12) _____ Being an authority doesn't mean that much to me.
 _____ People always seem to recognize my authority

- 13) _____ I am going to be a great person.
_____ I hope I am going to be successful.
- 14) _____ People sometimes believe what I tell them.
_____ I can make anybody believe anything I want them to.
- 15) _____ I am more capable than other people.
_____ There is a lot that I can learn from other people.
- 16) _____ I am much like everybody else.
_____ I am an extraordinary person.

APPENDIX G
IPIP EXTRAVERSION ITEMS

IPIP EXTRAVERSION ITEMS

Give one the following two responses to each statement: True or False

- | | | |
|---|------------|-------------|
| 1) I am the life of the party. | True _____ | False _____ |
| 2) I feel comfortable around people. | True _____ | False _____ |
| 3) I start conversations. | True _____ | False _____ |
| 4) I talk to a lot of different people at parties. | True _____ | False _____ |
| 5) I don't mind being the center of attention. | True _____ | False _____ |
| 6) I make friends easily. | True _____ | False _____ |
| 7) I warm up quickly to others. | True _____ | False _____ |
| 8) I know how to captivate people. | True _____ | False _____ |
| 9) I am skilled in handling social situations. | True _____ | False _____ |
| 10) I cheer people up. | True _____ | False _____ |
| 11) I don't talk a lot. | True _____ | False _____ |
| 12) I keep in the background. | True _____ | False _____ |
| 13) I would describe my experiences as somewhat dull. | True _____ | False _____ |
| 14) I don't like to draw attention to myself. | True _____ | False _____ |
| 15) I avoid contacts with others. | True _____ | False _____ |
| 16) I find it difficult to approach others. | True _____ | False _____ |
| 17) I am hard to get to know. | True _____ | False _____ |
| 18) I retreat from others. | True _____ | False _____ |
| 19) I have little to say. | True _____ | False _____ |
| 20) I keep others at a distance. | True _____ | False _____ |

APPENDIX H
IPIP NEUROTICISM ITEMS

IPIP NEUROTICISM ITEMS

Give one the following two responses to each statement: True or False

- | | | |
|--|------------|-------------|
| 1) I often feel blue. | True _____ | False _____ |
| 2) I dislike myself. | True _____ | False _____ |
| 3) I am often down in the dumps. | True _____ | False _____ |
| 4) I have frequent mood swings. | True _____ | False _____ |
| 5) I panic easily. | True _____ | False _____ |
| 6) I am filled with doubts about things. | True _____ | False _____ |
| 7) I feel threatened easily. | True _____ | False _____ |
| 8) I get stressed out easily. | True _____ | False _____ |
| 9) I fear the worst. | True _____ | False _____ |
| 10) I worry about things. | True _____ | False _____ |
| 11) I seldom feel blue. | True _____ | False _____ |
| 12) I feel comfortable with myself. | True _____ | False _____ |
| 13) I rarely get irritated. | True _____ | False _____ |
| 14) I am not easily bored by things. | True _____ | False _____ |
| 15) I am very pleased with myself. | True _____ | False _____ |
| 16) I am relaxed most of the time. | True _____ | False _____ |
| 17) I seldom get mad. | True _____ | False _____ |
| 18) I am not easily frustrated. | True _____ | False _____ |
| 19) I remain calm under pressure. | True _____ | False _____ |
| 20) I rarely lose my composure. | True _____ | False _____ |

APPENDIX I
HUMAN USE APPROVAL



LOUISIANA TECH
UNIVERSITY

MEMORANDUM

OFFICE OF UNIVERSITY RESEARCH

TO: Ms. Shelley Visconte and Dr. Mary Livingston
FROM: Dr. Stan Napper, Vice President Research & Development
SUBJECT: HUMAN USE COMMITTEE REVIEW
DATE: January 5, 2015

In order to facilitate your project, an EXPEDITED REVIEW has been done for your proposed study entitled:

“Personality Characteristics Related to Problematic Facebook Use”

HUC 1260

The proposed study’s revised procedures were found to provide reasonable and adequate safeguards against possible risks involving human subjects. The information to be collected may be personal in nature or implication. Therefore, diligent care needs to be taken to protect the privacy of the participants and to assure that the data are kept confidential. Informed consent is a critical part of the research process. The subjects must be informed that their participation is voluntary. It is important that consent materials be presented in a language understandable to every participant. If you have participants in your study whose first language is not English, be sure that informed consent materials are adequately explained or translated. Since your reviewed project appears to do no damage to the participants, the Human Use Committee grants approval of the involvement of human subjects as outlined.

Projects should be renewed annually. *This approval was finalized on January 5, 2015 and this project will need to receive a continuation review by the IRB if the project, including data analysis, continues beyond January 5, 2016.* Any discrepancies in procedure or changes that have been made including approved changes should be noted in the review application. Projects involving NIH funds require annual education training to be documented. For more information regarding this, contact the Office of University Research.

You are requested to maintain written records of your procedures, data collected, and subjects involved. These records will need to be available upon request during the conduct of the study and retained by the university for three years after the conclusion of the study. If changes occur in recruiting of subjects, informed consent process or in your research protocol, or if unanticipated problems should arise it is the Researchers responsibility to notify the Office of Research or IRB in writing. The project should be discontinued until modifications can be reviewed and approved.

If you have any questions, please contact Dr. Ed Griswold at 257-2120.

A MEMBER OF THE UNIVERSITY OF LOUISIANA SYSTEM

P.O. BOX 3092 • RUSTON, LA 71272 • TEL: (318) 257-5075 • FAX: (318) 257-5079


AN EQUAL OPPORTUNITY UNIVERSITY



LOUISIANA TECH
UNIVERSITY

MEMORANDUM

OFFICE OF UNIVERSITY RESEARCH

TO: Dr. Mary Livingston and Ms. Shelley Visconte 
FROM: Dr. Stan Napper, Vice President Research & Development
SUBJECT: HUMAN USE COMMITTEE REVIEW
DATE: January 29, 2015

In order to facilitate your project, an EXPEDITED REVIEW has been done for your proposed study entitled:

“Personality Characteristics Related to Problematic Facebook Use”

HUC 1260 REVISION

(Wording on consent form changed to improve readability).

The proposed study's revised procedures were found to provide reasonable and adequate safeguards against possible risks involving human subjects. The information to be collected may be personal in nature or implication. Therefore, diligent care needs to be taken to protect the privacy of the participants and to assure that the data are kept confidential. Informed consent is a critical part of the research process. The subjects must be informed that their participation is voluntary. It is important that consent materials be presented in a language understandable to every participant. If you have participants in your study whose first language is not English, be sure that informed consent materials are adequately explained or translated. Since your reviewed project appears to do no damage to the participants, the Human Use Committee grants approval of the involvement of human subjects as outlined.

Projects should be renewed annually. *This approval was finalized on January 29, 2015 and this project will need to receive a continuation review by the IRB if the project, including data analysis, continues beyond January 29, 2016.* Any discrepancies in procedure or changes that have been made including approved changes should be noted in the review application. Projects involving NIH funds require annual education training to be documented. For more information regarding this, contact the Office of University Research.

You are requested to maintain written records of your procedures, data collected, and subjects involved. These records will need to be available upon request during the conduct of the study and retained by the university for three years after the conclusion of the study. If changes occur in recruiting of subjects, informed consent process or in your research protocol, or if unanticipated problems should arise it is the Researchers responsibility to notify the Office of Research or IRB in writing. The project should be discontinued until modifications can be reviewed and approved.

If you have any questions, please contact Dr. Dr. Mary Livingston at 257-2292 or 257-5066.

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REFERENCES

- Aboujaoude, E., Doran, L. M., Gamel, N., Large, M. D., & Serpe, R. T. (2006). Potential markers for problematic Internet use: A telephone survey of 2,513 adults. *CNS Spectrums, 11*(6), 750-755. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/17008818>
- Ackerman, R. A., Witt, E. A., Donnellan, M. B., Trzesniewski, K. H., Robbins, R. W., & Kashy, D. A. (2011). What does the Narcissistic Personality Inventory really measure? *Assessment, 18*(1), 67-87. doi:10.1177/1073191110382845
- Adams, J., & Kirkby, R. J. (2002). Excessive exercise as an addiction: A review. *Addiction Research and Theory, 10*(5), 415-437. Retrieved from <http://psycnet.apa.org/psycinfo/2002-06036-001>
- Ahmad, A. (2011). Social networking sites and its popularity. *International Journal of Research and Reviews in Computer Science, 2*(2), 522-526. Retrieved from <http://scholarlyexchange.org/ojs/index.php/IJRRCS/article/view/8191/5881>
- Ahn, D. H. (2007). *Korean policy on treatment and rehabilitation for adolescents' Internet addiction*. Presented at 2007 International Symposium on the Counseling and Treatment of Youth Internet Addiction, National Youth Commission, Seoul, South Korea.

- Amato, P., & Fowler, F. (2002). Parenting practices, child adjustment, and family diversity. *Journal of Marriage and the Family*, 64(4), 703-716. Retrieved from <http://www.jstor.org/discover/10.2307/3599936?uid=2&uid=4&sid=2110445319>
- 2
- American Psychiatric Association (1987). *Diagnostic and statistical manual of mental disorders* (3rd ed., revised). Arlington, VA: Author.
- American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text revision). Arlington, VA: Author.
- American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: Author.
- Ames, D. R., Rose, P., & Anderson, C. P. (2006). The NPI-16 as a short measure of narcissism. *Journal of Research in Personality*, 40(3), 440-450.
doi:10.1016/j.jrp.2005.03.002
- Amichai-Hamberger, Y., & Vinitzky, G. (2010). Social networking use and personality. *Computers in Human Behavior*, 26(1), 1289-1295.
doi:10.1016/j.chb.2010.03.018
- Andreassen, C. S., Griffiths, M. D., Gjertsen, S. R., Krossbakken, E., Kvam, S., & Pallesen, S. (2013). The relationships between behavioral addictions and the five-factor model of personality. *Journal of Behavioral Addictions*, 2(6), 90-99.
doi:10.1556/JBA.2.2013.003
- Andreassen, C. S., Hetland, J., & Pallesen, S. (2010). The relationship between “workaholism,” basic needs satisfaction at work and personality. *European Journal of Personality*, 24(2), 3-17. doi:10.1002/per.737

- Andreassen, C. S., Torsheim, T., Brunborg, G. S., & Pallensen, S. (2012). Development of a Facebook addiction scale. *Psychological Reports, 110*(2), 501-517.
doi:10.2466/02.09.18.PR0.110.2.501-517
- Ang, A. (July 2, 2005). China takes unique steps to combat web addiction. *USA Today*.
Retrieved
from http://www.usatoday.com/tech/news/2005-07-01-china-web-addiction_x.htm
- Armstrong, L., Phillips, J., & Saling, L. (2000). Potential determinants of heavier Internet usage. *International Journal of Human-Computer Studies, 53*(5), 537-500.
doi:10.1006/ijhc.2000.0400
- Austin, E. J., Gibson, G. J., Deary, I. J., McGregor, M. J., & Dent, J. B. (1998). Individual response spread in self-report scales: personality correlations and consequences. *Personality and Individual Differences, 24* (1), 421-438. doi:19188699700175X
- Back, M. D., Stopfer, J. M., Vazire, S., Gaddis, S., Schmukle, S. C., Egloff, B., & Gosling, S. D. (2010). Facebook profiles reflect actual personality, not self-idealization. *Psychological Science, 21*(4), 372-374.
doi:10.1177/0956797609360756
- Bai, Y. M., Lin, C. C., & Chen, J. Y. (2001). Internet addiction disorder among clients of a virtual clinic. *Psychiatric Services, 52*(10), 1397.
doi:10.1176/appi.ps.52.10.1397

- Bakken, I. J., Wenzel, H. G., Gotestam, K. G., Johansson, A., & Oren, A. (2009). Internet addiction among Norwegian adults: A stratified probability sample study. *Scandinavian Journal of Psychology, 50*(3), 121-127. doi:10.1111/j.1467-9450.2008.00685
- Baldasaro, R. E., Shanahan, M. J., & Bauer, D. J. (2013). Psychometric properties of the Mini-IPIP in a large, nationally representative sample of young adults. *Journal of Personality Assessment, 95*(1), 74-84. doi:10.1080/0023891.2012.700466
- Barker, V. (2009). Older adolescents' motivations for social networking site use: The influence of gender, group identity, and collective self-esteem. *Cyberpsychology & Behavior, 12*, 209-213. doi:10.1089/cpb.2008.0228
- Barro, R. J. & Lee, J. W. (April, 2013). *UNESCO Institute for Statistics*. Retrieved from <http://www.barrolee.com/update.htm>
- Baumeister, R. F., & Vohs, K. D. (2001). Narcissism as addiction to esteem. *Psychological Inquiry, 12*(6), 206-210. Retrieved from <http://www.jstor.org/discover/10.2307/1449473?uid=2&uid=4&sid=21104453198>
- Beane, D. A. (2012). A tale of self-monitoring, social capital, and social media. UNF Theses and Dissertations. Retrieved from <http://digitalcommons.unf.edu/etd/343>
- Beard, K. (2002). Internet addiction. Current status and implications for employees. *Journal of Employment Counseling, 39*(1), 2-11. doi:10.1002/j.2161-1920.2002.tb00503

- Beard, K. W. (2005). Internet addiction: A review of current assessment techniques and potential assessment questions. *Cyberpsychology and Behavior*, 8(5), 7-14.
Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/15738688>
- Beard, K. W., & Wolf, E. M. (2001). Modification in the proposed diagnostic criteria for Internet addiction. *Cyberpsychology and Behavior*, 4(3), 377-383. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/11710263>
- Benjamin, J., Li, L., Patterson, C., Greenburg, B., Murphy, D., & Hamer, D. (1996). Population and familial association between the D4 dopamine receptor gene and measures of novelty seeking. *Nature Genetics*, 12(2), 81-84. Retrieved from http://download.bion.com.cn/upload/month_0901/20090110_9da026fb16a701f8ede5787rKcvnkdZl.attach.pdf
- Bergen, S. M., Farrington, M. E., Davenport, S. W., & Bergen, J. Z. (2011). Millennials, narcissism, and social networking: What narcissists do on social networking sites and why. *Personality and Individual Differences*, 50(3), 706-711.
doi:10.1016/j.paid.2010.12.022
- Bernardi, S., & Pallanti, S. (2009). Internet addiction: A descriptive clinical study focusing on comorbidities and dissociative symptoms. *Comprehensive Psychiatry*, 50(6), 510-516. doi:10.1016/j.comppsy.2008.11.011
- Bibby, P. A. (2008). Dispositional factors in the use of social networking sites: Findings and implications for social computing research. *Lecture Notes in Computer Science*, 5075, 392-400. doi:10.1007/978-3-540-69304-8_40

- Black, D., Belsare, G., & Schlosser, S. (1999). Clinical features, psychiatric comorbidity, and health-related quality of life in persons reporting compulsive computer behavior. *Journal of Clinical Psychiatry*, *60*(4), 839-843. Retrieved from <http://europepmc.org/abstract/MED/10665630>
- Bleske-Rechek, A., Remiker, M. W., & Baker, J. P. (2008). Narcissistic men and women think they are so hot but they are not. *Personality and Individual Differences*, *45*(6), 420-424. doi:10.1016/j.paid.2008.05.018
- Block, J. J. (2008). Issues for DSM-V: Internet addiction. *American Journal of Psychiatry*, *165*(5), 305-307. doi:10.1176/appi/ajp.2007.07101556
- Blum, K., Chen, A. L., Chen, T. J., Braverman, E. R., Reinking, J., Blum, S. H.,...Oscar-Berman, M. (2008). Activation instead of blocking mesolimbic dopaminergic reward circuitry is a preferred modality in the long term treatment of reward deficiency syndrome (RDS): a commentary. *Theoretical Biology and Medical Modeling*, *5*(1), 24. doi:10.1186/1742-4682-5-24
- Blum, K., Cull, J. G., & Comings, E. D. (1996). Biogenetics of reward deficiency syndrome. *American Scientist*, *84*(6), 132-145. doi:10.1080/02791072.2000.10736099
- Bookman, E. B., Taylor, R. E., Adams-Campbell, L., & Kittles, R. A. (2002). DRD4 promoter SNPs and gender effects on Extraversion in African Americans. *Molecular Psychiatry*, *7*, 786-789. doi:10.1038/sj.mp.4001075
- Boyd, D. M., & Ellison, N. B. (2007). Social networking sites: Definition, history and scholarship. *Journal of Computer-Mediated Communication*, *13*(2), 210-230. doi:10.1111/j.1083-6101.2007.00393

- Boyd, D. M., & Hargittai, E. (2010). Facebook privacy settings: Who cares? *First Monday*, 5(5), 8. Retrieved from <http://dx.doi.org/10.5210/fm.v15i8.3086>
- Boyd, D. M., Hargittai, E., Schultz, J., & Palfrey, J. (2011). Forbidden for children under 13. Why parents help their children lie to Facebook age: Unintended consequences of the Children Online Privacy Protection Act. *First Monday*, 16(11) 1-2. Retrieved from <http://firstmonday.org/ojs/index.php/fm/article/view/3850/3075>
- Bradley, P. M., & Emmons, R. A. (1992). Locating narcissism within the interpersonal circumplex and the five-factor model. *Personality and Individual Differences*, 13(4), 821-830. doi:10.1016/0191-8869(92)90056-U
- Brenner, V. (1997). Psychology of computer use: XLVII. Parameters of Internet use, abuse, and addiction: The first 90 days of the Internet usage survey. *Psychological Reports*, 80(3), 879-882. doi:10.2466/pr0.1997.80.3.879
- Brewer, G. (2014). Ten years of Facebook. *Digital Eye*. Retrieved from <http://www.digitaleyemedia.com/blog/ten-years-of-facebook-how-facebook-has-changed-internet-marketing>
- British Columbia Ministry for Children and Families (1996). *Adult addictions*. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.89.1099&rep=rep1&type=pdf>
- Brown, J. D., & Bobkowski, P. S. (2011). Older and newer media: Patterns of use and effects on adolescents' health and well-being. *Journal of Research on Adolescents*, 21(1), 95-113. doi:10.111/j.1532-7795.2010.00717.x

- Brown, R. I. F. (1993). Some contributions of the study of gambling to the study of other addictions. In W. R. Eadington & J. Cornelius (Eds.), *Gambling behavior and problem gambling* (pp. 341-372). Reno: University of Nevada.
- Brunborg, G. S., Mentzoni, R. A., Molde, H., Myrseth, H., Skouveroe, K. J. M., Bjorvatn, B., & Pallesen, S. (2011). The relationship between media use in the bedroom, sleep habits, and symptoms of insomnia. *Journal of Sleep Research, 20*(6), 569-575. doi:10.1111/j.1365-2869.2011.00913
- Buffardi, L. E., & Campbell, W. K. (2008). Narcissism and social networking Web sites. *Personality and Social Psychology Bulletin, 34*(5), 1303-1314. doi:10.1177/0146167208320061
- Buss, D. M., & Chiodo, L. M. (1991). Narcissistic acts in everyday life. *Journal of Personality, 59*(1), 179-215. doi:10.1111/j.1467-6494.1991.tb00773.x
- Buss, D. M., & Craik, K. H. (1986). Acts, dispositions, and clinical assessment: The psychopathology of everyday conduct. *Clinical Psychology Review, 6*(2), 387-406. doi:10.1016/0272-7358(86)90028-0
- Caci, B., Cardaci, M., Tabacchi, M. E., & Scrima, F. (2014). Personality variables as predictors of Facebook usage. *Psychological Reports, 114*(2), 528-539. doi:10.2466/21.09.PRO.114k23w6
- Califano, J. A. (2011). 2011 national teen survey finds: Teens regularly using social networking sites likelier to smoke, drink, and use drugs. *CASA Columbia*. Retrieved from <http://www.casacolumbia.org/newsroom/press-releases/2011-national-teen-survey-finds>

- Cam, E., & Isbulan, O. (2012). A new addiction for teacher candidates: Social networkings. *Turkish Online Journal of Education Technology -- TOJET*, 11(3), 14-19. Retrieved from <http://files.eric.ed.gov/fulltext/EJ989195.pdf>
- Campbell, A. J., Cumming, S. R., & Hughes, I. (2006). Internet use by the socially fearful: Addiction or therapy? *Cyberpsychology and Behavior*, 9(4), 69-81. doi:10.1089/cpb.2006.9.69
- Campbell, J. D., & Fehr, B. (1990). Self-esteem and perception of conveyed impressions: Is negative affectivity associated with greater realism? *Journal of Personality and Social Psychology*, 58(3), 122-133. doi:10.1037/0022-3514.58.1.122
- Campbell, W. K. (1999). Narcissism and romantic attraction. *Journal of Personality and Social Psychology*, 77(6), 1254-1270. doi:10.1037/0022-3514.77.6.1254
- Campbell, W. K., & Foster, C. A. (2002). Narcissism and commitment in romantic relationships: An investment model analysis. *Personality and Social Psychology Bulletin*, 28(1), 484-495. doi:10.1177/0146167202287006
- Campbell, W. K., Foster, C. A., & Finkel, E. J. (2002). Does self-love lead to love for others? A story of narcissistic game playing. *Journal of Personality and Social Psychology*, 83(5), 340-354. doi:10.1037//0022-3514.83.2.340
- Campbell, W. K., & Foster, J. D. (2007). The narcissistic self: Background, an extended agency model, and ongoing controversies. In C. Sedikides & S. J. Spencer (Eds.), *The self: Frontiers of social psychology* (pp. 115-138). New York, NY: Psychology Press.

- Canan, F., Ataoglu, A., Nichols, L. A., Yildirium, T., & Ozturk, O. (2010). Evaluation of psychometric properties of the Internet Addiction Scale in a sample of Turkish high school students. *Cyberpsychology, Behavior, and Social Networking, 13*(3), 317-320. doi:10.1089/cyber/2009.0160
- Cao, F., Su, L., Liu, T., & Gao, X. (2007). The relationship between impulsivity and Internet addiction in a sample of Chinese adolescents. *European Psychiatry, 22*(2), 466-471. doi:10.1016/j.eurpsy.2007.05.004
- Caplan, S. E. (2003). Preference for online social interaction: A theory of problematic Internet use and psychosocial well-being. *Communication Research, 30*(6), 625-648. doi:10.1177/0093650203257842
- Carpenter, C. J. (2012). Narcissism on Facebook: Self-promotional and anti-social behavior. *Personality and Individual Differences, 52*(3), 482-486. doi:10.1016/j.paid.2011.11.011
- Ceyhan, A. A., & Ceyhan, E. (2008). Loneliness, depression, and computer self-efficacy as predictors of problematic Internet use. *Cyberpsychology and Behavior, 11*(4), 699-701. doi:10.1089/cpb.2007.0255
- Chak, K., & Leung, L. (2004). Shyness and locus of control as predictors of Internet addiction and Internet use. *Cyberpsychology and Behavior, 7*(6), 559-570. doi:10.1089.1094931042413073
- Chakraborty, K., Grover, S., & Basu, D. (2010). Pattern of Internet use: A survey [Abstract]. *Indian Journal of Psychiatry, 52*(5), S42. Retrieved from http://easap.asia/journal_file/1003_V20N3_p123.pdf

- Chan, T. K. H., Cherry, C. M. K., Shi, N., & Lee, M. K. O. (2015). Gender differences in satisfaction with Facebook users. *Industrial Management and Data Systems*, *115*(1), 182-206. doi:10.1108/1MDS-08-2014-0234
- Chang, M. K., & Law, S. P. M. (2008). Factor structure for Young's Internet Addiction Test: A confirmatory study. *Computers in Human Behavior*, *24*(1), 2597-2619. doi:10.1016/j.chb.2008.03.001
- Cheng, C., & Li, A. Y. (2014). Internet addiction prevalence and quality of real life: A meta-analysis of 31 nations across seven world regions. *Cyberpsychology, Behavior, and Social Networking*, *17*(12), 755-760. doi:10.1089/cyber.2014.0317
- Chiu, S. I., Lee, J. Z., & Huang, D. H. (2004). Videogame addiction in children and teenagers in Taiwan. *Cyberpsychology and Behavior*, *7*(5), 571-581. doi:10.1089/cpb.2004.7.571
- Cho, H., Kwon, M., Choi, J., Lee, S., Choi, J., Choi, S., & Kim, D. (2014). Development of the Internet addiction scale based on the Internet Gaming Disorder criteria suggested in the DSM-5. *Addictive Behavior*, *39*(9), 1361-1366. doi:10.1016/j.addbeh.2014.020
- Choi, J., & Kim, Y. (2014). The moderating effects of gender and number of friends on the relationship between self-presentation and brand-related word-of-mouth on Facebook. *Personality and Individual Differences*, *68*(1), 1-5. doi:10.1016/j.paid.2014.03.040
- Choi, K., Son, H., Park, M., Han, J., Kim, K., Lee, B., & Gwak, H. (2009). Internet overuse and excessive daytime sleepiness in adolescents. *Psychiatry and Clinical Neurosciences*, *63*(2), 455-462. doi:10.1111/j.1440-1819.2009.01925

- Choi, Y. S., & Ross, L. (2006). Policy and power: The impact of the Internet on the younger generation in South Korea. *Social Policy and Society*, 5(1), 421-429. doi:10.1017/S1474746406003095
- Choliz, M. (2010). Mobile phone addiction: A point of issue. *Addiction*, 105(6), 373-374. doi:10.1111/j.1360-0443.2009.02854
- Chou, C. (2001). Internet abuse and addiction among Taiwan college students: An online interview study. *Cyberpsychology and Behavior*, 4(5), 573-585. doi:10.1089/109493101753235160
- Chou, C., Condrón, L., & Belland, J. (2005). A review of the research on Internet addiction. *Educational Psychology Review*, 17(2), 363-388. doi:10.1007/s10648-005-8138-1
- Chou, C., & Hsiao, M.-C. (2000). Internet addiction, usage, gratification, and pleasure experience: The Taiwan college students' case. *Computers and Education*, 35(1), 65-80. doi:10.1016/S0360-1315(00)00019-1
- Christakis, D. A., & Moreno, M. A. (2009). Trapped in the Net. Will Internet addiction become a 21st-century epidemic? *Archives of Pediatrics and Adolescent Medicine*, 163(5), 959-960. doi:10.1001/archpediatrics.2009.162
- Clark, M., & Calleja, K. (2008). Shopping addiction: a preliminary investigation among Maltese university students. *Addiction Research and Theory*, 16(4), 633-649. doi:10.1080/16066350801890050
- Cooper, A. (1997). The Internet and sexuality: Into the next millennium. *Journal of Sex Education Therapy*, 22(1), 5-6. doi:10.1089/cpb.1998.1.187

- Cooper, A., Putnam, D., Planchon, L., & Boies, S. (1999). The online sexual compulsivity: Getting tangled in the net. *Sexual Addiction and Compulsivity: Journal of Treatment and Prevention*, 6(3), 79-104.
doi:10.1080/10720169908400182
- Cooper, A., Smillie, L., & Corr, P. (2010). A confirmatory factor analysis of the Mini-IPIP five-factor model personality scale. *Personality and Individual Differences*, 48, 688-691. doi:10.1016/j.paid.2010.01.004
- Correa, T., Hinsley, A. W., & de Zuniga, H. G. (2010). Who interacts on the Web?: The intersection of users' personality and social media use. *Computers in Human Behavior*, 26(6), 247-253. doi:10.1191/2183127001951293
- Costa, P. T., & McCrae, R. R. (1992a). Normal personality assessment in clinical practice. The NEO personality inventory. *Psychological Assessment*, 4(5), 5-13.
doi:10.1037/1040-3590.4.1.5
- Costa, P. T., & McCrae, R. R. (1992b). *Revised NEO personality inventory (NEO-PI-R) and the NEO Five-Factor inventory (NEO-FFI): Professional manual*. Odessa, FL: Psychological Assessment Resources.
- Cozby, P. C. (2009). *Methods of behavioral research*. New York, NY: McGraw-Hill.
- Cromie, W. J. (1999). Computer addiction is coming on-line. *The Harvard University Gazette*. Retrieved from
<http://www.news.harvard.edu/gazette/1999/01.21/computer.html>

- Culter, J. (2005). \$178 billion in employee productivity lost in the U.S. annually due to *Internet misuse*. Retrieved from <http://www.prnewswire.com/news-releases/178-billion-in-employee-productivity-lost-in-the-us-annually-due-to-internet-misuse-reports-websense-inc-54649182.html>
- Czincz, J., & Hechanova, R. (2009). Internet addiction: Debating the diagnosis. *Journal of Technology in Human Services, 27*(1), 257-272.
doi:10.1080/15228830903329815
- Das, B., & Sahoo, J. S. (2011). Social networking sites: A critical analysis of its impact on personal and social life. *International Journal of Business and Social Science, 2*(14), 222-228. Retrieved from http://www.ijbssnet.com/journals/Vol._2_No._14%3B_July_2011/25.pdf
- Davis, R. A. (2001). A cognitive-behavioral model of pathological Internet use. *Computers in Human Behavior, 17*(2), 187-195. doi:10.1016/S0747-5632(00)00041-8
- Davis, R. A., Flett, G. L., & Besser, A. (2002). Validation of a new scale for measuring problematic Internet use: Implications for pre-employment screening. *Cyberpsychology and Behavior, 5*(4), 331-345.
doi:10.1089/109493102760275581
- DeAndrea, D. C., Tong, S. T., & Walther, J. B. (2011). Dark sides of computer-mediated communication. In W. R. Cupach & B. H. Spitzberg (Eds.), *The dark side of close relationships, II* (pp. 95-118). New York, NY: Routledge.
- Deary, F. De Fruyt, & F. Ostendorf (1999), *Personality Psychology in Europe, Vol. 7*. (pp. 7-28). Tilburg, The Netherlands: Tilburg University Press.

DeBerardis, D., D'Albenzio, A., Gambi, F., Sepede, G., Valchera, A., Conti, C. M.,...

Ferro, F. M. (2009). Alexithymia and its relationships with dissociative experiences and Internet addiction in a nonclinical sample. *Cyberpsychology and Behavior, 12*(1), 67-69. doi:10.1089/cpb.2008.0108

Dell'Osso, B., Altamura, C., Allen, A., Marazziti, D., & Hollander, E. (2006).

Epidemiological and clinical updates on impulse control disorders: A critical review. *European Archives of Psychiatry and Clinical Neuroscience, 256*(3), 464-475. doi:10.1007/s00406-006-0668-0

Dickinson, K. A., & Pincus, A. L. (2003). Interpersonal analysis of grandiose and vulnerable narcissism. *Journal of Personality Disorders, 17*(1), 188-207.

Retrieved from <http://www.sakkyndig.com/psykologi/artvit/dickinson2003.pdf>

Doherty, K., & Schlenker, B. R. (1991). Self-consciousness and strategic self-presentation. *Journal of Personality, 59*(3), 1-18. doi:10.1111/j.1467-

6494.1991.tb00765

Dong, G., Lu, Q., Zhou, H., & Zhao, X. (2010). Impulse inhibition in people with Internet addiction disorder: Electrophysiological evidence from a Go/NoGo study.

Neuroscience Letters, 485(2), 138-142. doi:10.1016/j.neulet.2010.09.002

Donnellan, M., Oswald, F., Baird, B., & Lucas, R. (2006). The Mini-IPIP scales: Tiny-yet-effective measures of the Big Five factors of personality. *Psychological*

Assessment, 18(5), 192-203. doi:10.1037/1040-3590.18.2.192

Duggan, M., & Smith, A. (2013). *Social media update 2013*.

Retrieved from <http://www.pewinternet.org/2013/12/30/social-media-update-2013/>

- Ebeling-Witte, S., Frank, M. L., & Lester, D. (2007). Shyness, Internet use, and personality. *Cyberpsychology and Behavior, 10*(6), 713-716.
doi:10.1089/cpb.2007.9964
- Egan, V., & McCorkindale, C. (2007). Narcissism, vanity, personality and mating effort. *Personality and Individual Differences, 43*(4), 2105-2115.
doi:10.1016/j.paid.2007.06.034
- Egger, O., & Rauterberg, M. (1996). *Internet behavior and addiction*. Zurich, Switzerland: Swiss Federal Institute of Technology. Retrieved from <http://www.idemployee.id.tue.nl/g.w.m.rauterberg/ibq/report.pdf>
- Ehrenberg, A., Juckes, S., White, K. M., & Walsh, S. P. (2008). Personality and self-esteem as predictors of young people's technology use. *Cyberpsychology and Behavior, 11*(6), 739-741. doi:10.1089/cpb.2008.0030
- Elliston, N. B., Steinfeld, C., & Lampe, C. (2007). The benefits of Facebook "friends": Social capital and college students' use of online social networking sites. *Journal of Computer-Mediated Communication, 12*(4), 1143-1168. doi:10.1111/j.1083-6101.2007.00367
- Emmons, R. A. (1984). Factor analysis and construct validity of the Narcissistic Personality Inventory. *Journal of Personality and Social Psychology, 50*(2), 116-123. doi:10.1207/s15327752jpa4803_11
- Emmons, R. A. (1987). Narcissism: Theory and measurement. *Journal of Personality and Social Psychology, 52*(1), 11-17. doi:10.1037/0022-3514.52.1.11

- Eski, F. (2012). Examination of narcissistic personality traits' predicting level of Internet addiction and cyber bullying through path analysis. *Educational Sciences: Theory and Practice*, 12(3), 1694-1706. Retrieved from http://www.academia.edu/2328898/Examination_of_Narcissistic_Personality_Traits_Predicting_Level_of_Internet_Addiction_and_Cyber_Bullying_through_Path_Analysis
- Eugenia, M. W., Hugo, N., & Wong, C. H. (2013). Facebook: More than social networking for at-risk students. *The 2nd International Conference on Integrated Information*. doi:10.1016/j.sbspro.2013.02.014
- Eysenck, H. J. (1981). General features for the model. In H. J. Eysenck (Ed.) *A model for personality* (pp. 1-37). Berlin, East Germany: Springer-Verlag.
- Eysenck, M. W., & Eysenck, H. J. (1980). The concept of personality. *British Journal of Personality*, 71(3), 191-204. doi:10.1111/j.2044-8295.1980.tb01737
- Facebook (2011a). *Facebook factsheet*. Retrieved from <http://www.Facebook.com/press/info.php?factsheet>
- Facebook (2011b). *Facebook statistics*. Retrieved from <http://www.Facebook.com/press/info.php?statistics>
- Fan, X., Miller, B. C., Park, K., Winward, B. W., Christensen, M., & Grotevant, H. D. (2006). An exploratory study about inaccuracy and invalidity in adolescent self-report surveys. *Field Methods*, 18(1), 223–244. doi:18/3/223.short
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, 41(1), 1149-1160. Retrieved from <http://www.gpower.hhu.de/>

- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175-191. Retrieved from <http://www.gpower.hhu.de/>
- Feist, J., & Feist, G. J. (2009). *Theories of personality*. Boston, MA: McGraw Hill.
- Ferarro, G., Caci, B., D'Amico, A., & Di Blasi, M. (2007). Internet addiction disorder: An Italian study. *Cyberpsychology and Behavior*, 10(2), 170-175.
doi:10.1089/cpb.2006.9972
- Fioravanti, G., Dettore, D., & Casale, S. (2012). Adolescent Internet addiction: Testing the association between self-esteem, the perception of Internet attributes, and for online social interactions. *Cyberpsychology, Behavior and Social Networking*, 15(6), 318-323. doi:10.1089/cyber.2011.0358
- Fisher, S. (1994). Identifying video game addiction in children and adolescents. *Addictive Behaviors*, 19(5), 545-553. doi:10.1016/0306-4603(94)90010-8
- Fogel, J., & Nehmad, E. (2009). Internet social networking communities: Risk taking, trust, and privacy concerns. *Computers in Human Behavior*, 25, 153-160.
doi:10.1016/j.chb.2008.08.006
- Fortson, B. L., Scotti, J. R., Chen, Y. C., Malone, J., & Del Ben, K. S. (2007). Internet use, abuse, and dependence among students at a southeastern regional university. *Journal of American College Health*, 56(2), 137-144.
doi:10.3200/JACH.56.2.137-146

- Fossati, A., Beauchaine, T. P., Grazioli, F., Carretta, I., Cortinovis, F., & Maffei, C. (2005). A latent structure analysis of Diagnostic and Statistical Manual of Mental Disorders, Narcissistic Personality Disorder criteria. *Comprehensive Psychiatry*, 46(6), 361-367. doi:10.1016/j.comppsy.2004.11.006
- France, A. (2009). *Facebook 'disrespect' led to killing in street*. Retrieved from <http://www.thesun.co.uk/sol/homepage/news/2781029/Facebook-insult-led-to-killing-in-the-street.html>
- Frangos, C. C., Frangos, C. C., & Kiohos, A. P. (2010). Internet addiction among Greek university students: Demographic associations with the phenomenon, using the Greek version of Young's Internet Addiction Test. *International Journal of Economic Sciences and Applied Research*, 3(1), 49-74. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1591822
- Frangos, C. C., Frangos, C. C., & Sotiropoulos, I. (2012). A meta-analysis of the reliability of Young's Internet Addiction Test. *Proceedings of the World Congress on Engineering, 1*. London, England. Retrieved from <http://connection.ebscohost.com/c/articles/87089064/meta-analysis-reliability-youngs-internet-addiction-test>
- Fu, K. W., Chan, W. S. C., Wong, P. W. C., & Yip, P. S. F. (2010). Internet addiction: Prevalence, discriminant validity and correlates among adolescents in Hong Kong. *The British Journal of Psychiatry*, 196(3), 486-492. doi:10.1192/bjp.bp.109.075002
- Funder, D. C. (1997). *The personality puzzle*. New York, NY: Norton.

- Gabriel, M. T., & Critelli, J. W. (1994). Narcissistic illusions in self-evaluations of intelligence and attractiveness. *Journal of Personality, 62*(1), 143-155.
doi:10.2138/a1138439
- Garcia, D., & Sikstrom, S. (2014). The dark side of Facebook: Semantic representations of status updates predict the dark triad of personality. *Personality and Individual Differences 67*(2), 92-96. 10.16/j.paid.2013.10.001
- Gaudin, S. (2009). *54% companies ban Facebook, Twitter at work*. Retrieved From
http://www.computerworld.com/s/article/9139020/Study_54_of_companies_ban_Facebook_Twitter_at_work
- Ghassemzadeh, L., Shahraray, M., & Moradi, A. (2008). Prevalence of Internet addiction and comparison of Internet addicts and non-addicts in Iranian high schools. *Cyberpsychology and Behavior, 11*(2), 731-333. Retrieved from
<http://connection.ebscohost.com/c/articles/35644012/prevalence-internet-addiction-comparison-internet-addicts-non-addicts-iranian-high-schools>
- Goldberg, I. (1996). *Internet addiction disorder* [Electronic mailing list message]. Retrieved from <http://users.rider.edu/~suler/psycyber/supportgp.html>
- Goldberg, L. R. (1999). A broad-bandwidth, public domain, personality inventory measuring the lower-level facets of several five-factor models. In I. Mervielde, I.
- Goodmon, L. B., Smith, P. L., Ivancevich, D., & Lundberg, S. (2014). Actions speak louder than personality: Effects of Facebook content on personality perceptions. *North American Journal of Psychology, 16*(1), 105-120. doi:10.1037/a0027329

- Gosling, S. D., Augustine, A. A., Vazire, S., Holtzman, N., & Gaddis, S. (2011). Manifestations of personality in online social networkings: Self-reported Facebook-related behaviors and observable profile information. *Cyberpsychology, Behavior, and Social Networking, 14*(9), 483-488. doi:10.1089/cyber.2010.0087
- Gosling, S. D., Rentfrow, P. J., & Swann, W. B. (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in Personality, 37*(6), 504-528. doi:10.1016/S0092-6566(03)00046-1
- Grant, J. E., Brewer, J. A., & Potenza, M. N. (2006). The neurobiology of substance and behavioral addictions. *CNS Spectrums, 11*(5), 924-930. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/17146406>
- Greenfield, D. N. (1999). Psychological traits of compulsive Internet use: A preliminary analysis. *Cyberpsychology and Behavior, 2*(5), 403-412. doi:10.1089/cpb.1999.2.403
- Gribbin, A. (2011). A brief history of the Internet. *New Statesman, 140*(30), 30. Retrieved from <http://connection.ebscohost.com/c/articles/64352885/brief-history-internet>
- Griffiths, M. (1995). Technological problems. *Clinical Psychology Forum, 76*(1), 14-19. Retrieved from http://www.academia.edu/751805/Griffiths_M.D._1995_. _Technological_addictions._Clinical_Psychology_Forum_76_14-19
- Griffiths, M. (1996). Gambling on the Internet: A brief note. *Journal of Gambling Studies, 12*(2), 471-473. doi:10.1007/BF01539190

- Griffiths, M. (1997). Psychology of computer use: XLIII. Some comments on 'Addictive use of the Internet by Young. *Psychological Reports*, 80(4), 81-82. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/9122355>
- Griffiths, M. (1998). Internet addiction: Does it really exist? In J. Gackenbach (Ed.), *Psychology and the Internet* (pp. 61-75). San Diego, CA: Academic Press.
- Griffiths, M. (1999). Internet addiction: Fact or fiction? *The Psychologist*, 12(5), 246-250. doi:10.1091/2576090162225460
- Griffiths, M. (2000). Internet addiction: Time to be taken seriously? *Addiction Research*, 8(5), 413-418. doi:10.3109/16066350009005587
- Griffiths, M. (2005). A "components" model of addiction within a biopsychosocial framework. *Journal of Substance Use*, 10(3), 191-197. doi:10.1080/14659890500114359
- Griffiths, M. (2010). Gaming in social networking sites: A growing concern? *World Online Gambling Law Report*, 9(5), 12-13. Retrieved from http://www.academia.edu/447636/Griffiths_M.D._2010_.Gaming_in_social_networking_sites_A_growing_concern_World_Online_Gambling_Law_Report_9_5_12-13
- Griffiths, M. (2012). Facebook addiction: Concerns, criticism, and recommendations—A response to Andreassen and colleagues. *Psychological Reports*, 110(2), 518-520. doi:10.2466/01.07.18.PO0.110.2.518-520

- Griffiths, M. D. (2001). Excessive Internet and computer use: Implications for education. *Education and Health, 19*(2), 23-29. Retrieved from http://www.academia.edu/429636/Griffiths_M.D._2001_.Excessive_internet_use_Implications_for_education._Education_and_Health_19_23-29
- Griffiths, M. D., & Parke, J. (2010). Adolescent gambling on the Internet: A review. *International Journal of Adolescent Medicine and Health, 22*(6), 59-75. Retrieved from http://usir.salford.ac.uk/18183/1/Youth_Int_Gamb_Griffiths_and_Parke_2010.pdf
- Grohol, J. M. (2000). Too much time online: Internet addiction or healthy social interactions? *Cyberpsychology and Behavior, 2*(5), 395-401. doi:10.1089/cpb.1999.2.395
- Grohol, J. M. (2009) Facebook reinforces relationship jealousy. Retrieved from <http://psychcentral.com/blog/archives/2009/08/11/Facebook-reinforces-relationship-jealousy/>
- Guan, S. S., & Subrahmanyam, K. (2009). Youth Internet use: Risks and opportunities. *Current Opinion in Psychiatry, 22*(1), 351-356. doi:10.1097/YCO.0b013e32832bd7e0
- Ha, J. H., Kim, S. Y., Bae, S. C., Bae, S., Kim, H., Sim, M.,... Cho, S. C. (2007). Depression and Internet addiction in adolescents. *Psychopathology, 40*(6), 424-430. doi:10.1159/000107426

- Ha, J. H., Yoo, H. J., Cho, I. H., Chin, B., Shin, D., & Kim, J. H. (2006). Psychiatric comorbidity assessed in Korean children and adolescents who screen positive for Internet addiction. *Journal of Clinical Psychiatry*, *67*(2), 821-826. doi:10.1027/j.3020.05.005
- Haferkamp, N., Eimler, S. C., Papadakis, A., & Kruck, J. V. (2012). Men are from Mars, women are from Venus? Examining gender differences in self-presentation on social networking sites. *Cyberpsychology, Behavior, and Social Networking*, *15*(2), 91-98. doi:10.1008/ZDP.1c124f43943de8f1
- Hall, A. S., & Parsons, J. (2001). Internet addiction: College student case study using best practices in Cognitive Behavioral Therapy. *Journal of Mental Health Counseling*, *23*(3), 312-327. Retrieved from <http://www.biomedsearch.com/article/Internet-addiction-college-student-case/80553851.html>
- Hampton, K., Goulet, L. S., Rainie, L., & Purcell, K. (2011). *Social networking sites and our lives*. Retrieved from <http://www.pewInternet.org/Reports/2011/Technology-and-social-networkings.aspx>
- Han, D. H., Bolo, N., Daniels, M. A., Arenella, L., Lyoo, I. K., & Renshaw, P. F. (2011). Brain activity and desire for Internet video game play. *Comprehensive Psychiatry*, *52*(4), 88-95. doi:10.1016/j.comppsy.2010.04.004
- Hardie, E., & Tee, M. (2007). Excessive Internet use: The role of personality, loneliness and social support networkings in Internet addiction. *Australian Journal of Emerging Technologies and Society*, *5*(1), 34-47. Retrieved from <http://ictaugustine.pbworks.com/f/Excessive+Internet+Use.pdf>

- Hargittai, E. (2008). Whose space? Differences among users and non-users of social networking sites. *Journal of Computer-Mediated Communication*, 13(5), 267-297. doi:10.1111/j.1083-6101.2007.00396
- Hargittai, E., & Hsieh, Y. P. (2010). From dabblers to omnivores: A typology of social networking site usage. In Z. Papacharissi (Ed.), *A networked self* (pp. 146-168). London, England: Routledge.
- Hart, J., Nailing, E., Bizeer, G. Y., & Collins, L. K. (2015). Attachment theory as a framework for explaining engagement with Facebook. *Personality and Individual Differences*, 4(7), 33-40. doi:10.1016/j.paid.2014.12016
- Haslam, N. (2007). *Introduction to personality and intelligence*. London, England: Sage.
- Hendin, H. M., & Cheek, J. M. (1997). Assessing hypersensitive narcissism: A reexamination of Murray's Narcissism Scale. *Journal of Research in Personality*, 31(6), 588-599. doi:10.1006/jrpe.1997.2204
- Hersen, M., Turner, S. M., & Biedel, D. C. (Eds.). (2007). *Adult psychopathology and diagnosis* (5th ed.). Hoboken, NJ: John Wiley & Sons.
- Hinz, O., Skiera, B., Barrot, C., & Becker, J. U. (2011). Seeding strategies for viral marketing: An empirical comparison. *Journal of Marketing*, 75(6), 55-71. doi:10.1509/jm.10.0088
- Hirschman, E. C. (1992). The consciousness of addiction: Toward a general theory of compulsive consumption. *Journal of Consumer Research*, 19(6), 157-178. doi:10093-5301/93/1902-0002

Hoffman, A. (May 19, 2008). The social media gender gap. *Bloomberg Business Week*.

Retrieved from

<http://www.businessweek.com/print/technology/content/may2008/tc20080516580743.htm>

Holden, C. (1997). Web of addiction. *Science*, 275, 1073. Retrieved from

<https://www.addictionspecialists.com/pdf/ce1301p1.pdf>

Horn, L. (February 3, 2012a). Facebook: More addictive than tobacco or alcohol? *PC Magazine*. Retrieved from

<http://www.pcmag.com/article2/0,2817,2399834,00.asp>

Horn, L. (February 8, 2012b). Study finds chemical reason behind Facebook 'addiction'.

PC Magazine. Retrieved from

<http://www.pcmag.com/article2/0,2817,2400011,00.asp>

Hou, H., Jia, S., Hu, S., Fan, R., Sun, W., Sun, T., & Zhang, H. (2012). Reduced striatal dopamine transporters in people with Internet addiction disorder. *Journal of Biomedicine and Biotechnology*, 1-5. doi:10.1155/2012/854524

Hoy, G. M., & Milne, G. (2010). Gender differences in privacy-related measures for young adult Facebook users. *Journal of Interactive Advertising*, 10(2), 28-45.

doi:doi:10.1080/dqc.2000.3.406

Huang, X., Zhang, H., Li, M., Wang, J., Zhang, Y., & Tao, R. (2010). Mental health, personality, and parental rearing styles of adolescents with Internet addiction disorder. *Cyberpsychology, Behavior, and Social Networking*, 13(4), 401-406.

doi:10.1089=cyber.2009.0222

- Hur, M. H. (2006). Demographic, habitual, and socioeconomic determinants of Internet addiction disorder: An empirical study of Korean teenagers. *Cyberpsychology and Behavior, 9*(5). doi:10.1089/cpb.2006.9.514
- Indian, M., & Grieve, R. (2014). When Facebook is easier than face-to-face: Social support derived from Facebook in socially anxious individuals. *Personality and Individual Differences, 59*, 102-106. doi:10.1016/j.paid.2013.11.016
- International Business Times (2013). *Facebook addiction can cause delusions and psychotic bouts, say scientists*. Retrieved from <http://www.ibtimes.co.uk/articles/464466/20130504/Facebook-addiction-delusions-mental-psychotic-illness-study.htm>
- Internet Live Stats (2015). Retrieved from <http://www.internetlivestats.com/internet-users/#sources>
- Ivcevic, Z., & Ambady, N. (2012). Personality impressions from identity claims on Facebook. *Psychology of Popular Media Culture, 1*(1), 38-45. doi:10.1037/a0027329
- Jacoby, J. & Matell, M. S. (1971) Three-point Likert scales are good enough. *Journal of Marketing Research, 8*(11), 495-500. doi:10.2307/3150242
- Jang, K. S., Hwang, S. Y., & Choi, J. Y. (2008). Internet addiction and psychiatric symptoms among Korean adolescents. *The Journal of School Health, 78*(3), 165-171. doi:10.1111/j.1746-1561.2007.00279.x

- Jelicic, H., Bobek, D. L., Phelps, E., Lerner, R. M., & Lerner, J. V. (2007). Using positive youth development to predict contribution and risk behaviors in early adolescence: Findings from the first two waves of the 4-H Study of Positive Youth Development. *International Journal of Behavioral Development, 31*(5), 263-273. doi:10.1177/0165025407076439
- Jenaro, C., Flores, N., Gomez-Vela, M., Gonzalez-Fil, F., & Caballo, C. (2007). Problematic Internet and cell-phone use: Psychological, behavioral, and health correlates. *Addiction Research and Theory, 15*(4), 309-320. doi:10.1080/16066350701350247
- Johansson, A., & Gotestam, K. (2004). Internet addiction: Traits of a questionnaire and prevalence in Norwegian youth (12-18 years). *Scandinavian Journal of Psychology, 45*(3), 223-229. doi:10.1111/j.1467-9450.2004.00398
- John, O. P., Naumann, L. P., & Soto, C. J. (2008). Paradigm shift to the integrative Big-Five trait taxonomy: History, measurement, and conceptual issues. In O. P. John, R. W. Robins, & L. A. Pervin (Eds), *Handbook of personality: Theory and research* (3rd ed., pp. 114-158). New York, NY: Guilford.
- John, O. P., & Robins, R. W. (1994). Accuracy and bias in self-perception: Individual differences in self-enhancement and the role of narcissism. *Journal of Personality and Social Psychology, 66*(2), 206-219. doi:10.1037/0022-3514.66.1.206
- Jones, W. H. (1981). Loneliness and social contact. *Journal of Social Psychology, 113*, 295-296. doi:10.1080/00224545.1981.9924386

- Kalampokis, E., Tambouris, E., Tarabanis, K. (2013). Understanding the predictive power of social media. *Internet Research*, 23(5), 544-559. doi:10.1073/0023-3425.77.2.317
- Kalpidou, M., Costin, D., & Morris, J. (2011). The relationship between Facebook and the well-being of undergraduate college students. *Cyberpsychology, Behavior, and Social Networking*, 14(1), 183-189. doi:10.1089/cyber.2010.0061
- Kaltiala-Heino, R., Lintonen, T., & Rimpela, A. (2004). Internet addiction? Potentially problematic use of the Internet in a population of 12-18 year-old adolescents. *Addiction Research and Theory*, 12(1), 89-96. doi:10.1080/1600663503100098796
- Kandell, J. J. (1998). Internet addiction on campus: The vulnerability of college students. *Cyberpsychology and Behavior*, 1(1), 11-17. doi:10.1089/cpb.1998.1.11
- Kao, P., & Craigie, P. (2014). Effects of English usage on Facebook and personality traits on achievement of students learning English as a foreign language. *Social Behavior and Personality*, 42(1), 17-24. doi:10.2224/sbp.2014.42.1.17
- Kapidzic, S. (2013). Narcissism as a predictor of motivations behind Facebook profile picture selection. *Cyberpsychology, Behavior, and Social Networking*, 16(1), 14-19. doi:10.1089/cyber.2012.0143
- Kaplan, A. M., & Haenlein, M. (2010). Users of the world unite! The challenges and opportunities of social media. *Business Horizons*, 1(53), 59-58. doi:10.1016/j.busher.2009.09.003

- Karaïskos, D., Tzavellas, E., Balta, G., & Paparrigopoulos, T. (2010). Social networking addiction: A new clinical disorder? *European Psychiatry, 25*(2), 855. doi:10.1016/S0924-9338(10)70846-4
- Kenny, D. A. (1994). *Interpersonal perception: A social relations analysis*. New York: Guilford.
- Kernberg, O. (1976). *Borderline conditions and pathological narcissism*. New York, NY: Jason Aronson.
- Kernberg, O. (1980). *Internal world and external reality*. New York, NY: Jason Aronson.
- Kesici, S., & Sahin, I. (2009). A comparative study of uses of the Internet among college students with and without Internet addiction. *Psychological Reports, 105*(3), 1103-1112. doi:10.2466/PR0.105.F.1103-1112
- Kesici, S., & Sahin, I. (2010). Turkish adaptation study of Internet Addiction Scale. *Cyberpsychology, Behavior, and Social Networking, 13*(2), 185-189. doi:10.1089/cyber.2009.0067
- Khazaal, Y., Billieux, J., Thorens, G., Khan, R., Louati, Y., Scarlatti, E.,...Zullino, D. (2008). French validation of the Internet Addiction Test. *Cyberpsychology and Behavior, 11*(6), 703-706. doi:10.1089/cpb.2007.0249
- Kim, E. J., Namkoong, K., Ku, T., & Kim, S. J. (2008). The relationship between online game addiction and aggression, self-control, and narcissistic personality traits. *European Psychiatry, 23*(4), 212-218. doi:0.1016/j.eurpsy.2007.10.010

- Kim, K., Ryu, E., Chon, M. Y., Yeun, E. J., Choi, S. Y., Seo, J. S., & Nam, B. W. (2006). Internet addiction in Korean adolescents and its relation to depression and suicidal ideation: A questionnaire survey. *International Journal of Nursing Studies, 43*(2), 185-192. doi:10.1016/j.ijnurstu.2005.02.005
- Kim, S. H., Baik, S., Park, C. S., Kim, S. J., Choi, S. W., & Kim, S. E. (2011). Reduced striatal dopamine D2 receptors in people with Internet addiction. *Neuroreport, 22*(8), 407-411. doi:10.1097/WNR.0b013e328346e16e
- King, D. L., Delfabbro, P. H., & Griffiths, M. D. (2010). The convergence of gambling and digital media: Implications for gambling in young people. *Journal of Gambling Studies, 26*(5), 175-187. doi:10.1007/s/0899-009-9153-9
- Kirschner, P. A., & Karpinski, A. C. (2010). Facebook and academic performance. *Computers in Human Behavior, 26*(6), 1237-1245. doi:10.1016/j.chb.2010.03.024
- Kisiel, R. (2009). *Town hall bans staff from using Facebook after they waste 572 hours in one month*. Retrieved from <http://www.dailymail.co.uk/news/article-1210361/Town-hall-bans-staff-using-Facebook-waste-572-hours-month.html>
- Kittinger, R., Correia, C. J., & Irons, J. G. (2012). Relationship between Facebook use and problematic Internet use among college students. *Cyberpsychology, Behavior and Social Networking, 16*(6), 324-327. doi:10.1089/cyber.2010.0410
- Klimmt, C., Schmid, H., & Orthmann, J. (2009). Exploring the enjoyment of playing browser games. *Cyberpsychology, Behavior and Social Networking, 12*(2), 231-234. doi:10.1089/cpb.2008.0128

- Ko, C. H., Liu, G. C., Hsiao, S., Yen, J. Y., Yang, M. J., Lin, W. C.,...Chen, C. S. (2009). Brain activities associated with gaming urge of online gaming addiction. *Journal of Psychiatry Research*, 43(6), 739-747. doi:10.1016/j.jpsychires.2008.09.012
- Ko, C. H., Yen, J. Y., Yen, C. F., Chen, C. S., Weng, C. C., & Chen, C. C. (2008). The association between Internet addiction and problematic alcohol use in adolescents: The problem behavior model. *Cyberpsychology and Behavior*, 11(5), 571-576. doi:10.1089/cpb.2007.0199.
- Ko, C. H., Yen, J. Y., Chen, C. C., Chen, S. H., Wu, K., & Yen, C. F. (2006). Tridimensional personality of adolescents with Internet addiction and substance use experience. *The Canadian Journal of Psychiatry*, 51(14), 887-894. Retrieved from <http://europepmc.org/abstract/MED/17249631>
- Ko, C. H., Yen, J. Y., Chen, C. C., Chen, S. H., & Yen, C. F. (2005). Proposed diagnostic criteria of Internet addiction for adolescents. *The Journal of Nervous and Mental Disease*, 193(5), 728-733. doi:10.1097/01.nmd.0000185891.13719.54
- Ko, C. H., Yen, J. Y., Chen, C. C., Yeh, Y. C., & Yen, C. F. (2009). Predictive values of psychiatric symptoms for Internet addiction in adolescents. *Archives of Pediatrics and Adolescent Medicine*, 163(4), 937-943. doi:10.1001/archpediatrics.2009.159
- Koc, M., & Gulyagci, S. (2013). Facebook addiction among Turkish college students: The role of psychological health, demographic, and usage of traits. *Cyberpsychology, Behavior and Social Networking*, 16(4), 279-284. doi:10.1089/cyber.2012.0249

- Korkeila, J., Kaarlas, S., Jaaskelainen, M., Vahlberg, T., & Taiminen, T. (2009). Attached to the web: Harmful use of the Internet and its correlates. *European Psychiatry, 25*(3), 236-241. doi:10.1016/j.eurpsy.2009.02.008
- Kosinski, M., Stillwell, D., & Graepel, T. (2013). Private traits and attributes are predictable from digital records of human behavior. *Proceedings of the National Academy of Sciences of the United States of America, 110*, 5802-5805.
- Kramer, N. C., & Winter, S. (2008). Impression management 2.0: The relationship of self-esteem, extraversion, self-efficacy, and self-presentation within social networking sites. *Journal of Media Psychology, 20*(2), 106-116. doi:10.1027/1864-1105.20.3.106
- Kratzer, S., & Hegerl, U. (2008). Is "Internet addiction" a disorder of its own? A study on subjects with excessive Internet use. *Psychiatrische Praxis, 35*(2), 80-83. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/17546534>
- Kraut, R., Lundmark, V., Patterson, M., Kiesler, S., Mukopadhyay, T., & Scherlis, W. (1998). Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist, 53*(9), 1017-1031. Retrieved from <http://www.apa.org/journals/amp/amp5391017.html>
- Kubey, R., & Csikszentmihalyi, M. (2002). Television addiction. *Scientific American, 286*(1), 74-81. Retrieved from <http://www.scientificamerican.com/article/television-addiction-is-n-2002-02/>

- Kuo, F. Y., Tseng, C. Y., Tseng, F. C., & Lin, C. S. (2013). A study of social information control affordances gender differences in Facebook self-presentation. *Cyberpsychology, Behavior, and Social Networking, 16*(9), 635-644. doi:10.1089/cyber.2012.0345
- Kuss, D. J., & Griffiths, M. D. (2011). Addiction to social networkings on the Internet: A literature review of empirical research. *International Journal of Environmental and Public Health, 8*(3), 3528-3552. doi:10.3390.ijerph8093528
- Kwon, J. H., Chung, C. S., & Lee, J. (2009). The effects of escape from self and interpersonal relationship on the pathological use of Internet games. *Community Mental Health Journal, 1*(47), 113-121. doi:10.1007/s10597-009-9236-1
- LaBarbera, D., La Paglia, F., & Valsavoia, R. (2009). Social networking and addiction. *Cyberpsychology and Behavior, 12*(5), 628-629. Retrieved from <http://www.liebertpub.com/overview/cyberpsychology-behavior-brand-social-networking/10/>
- Lahey, B. (2009) Public health significance of neuroticism. *American Psychologist, 64*(6), 241-256. doi:10.1037/a0015309
- Lam, L. T., Peng, Z. W., Mai, J. C., & Jing, J. (2009). Factors associated with Internet addiction among adolescents. *Cyberpsychology and Behavior, 12*(5), 551-555. doi:10.1177/1073382845191110
- Lavin, M., Marvin, K., McLarney, A., Nola, V., & Scott, L. (1999). Sensation seeking and collegiate vulnerability to Internet dependence. *Cyberpsychology and Behavior, 2*(5), 425-430. doi:10.1001/j.2116-1920.1998.tb00305

- Lee, K., & Ashton, M. C. (2005). Psychopathy, Machiavellianism, and Narcissism in the Five-Factor Model and the HEXACO model of personality structure. *Personality and Individual Differences, 38*(7), 1571-1582. doi:10.1016/j.paid.2004.09.016
- Lee, Y. S., Han, D. H., Yang, K. C., Daniels, M. A., Na, C., Kee, B. S., & Renshaw, P. F. (2008). Depression-like traits of 5HTTLPR polymorphism and temperament in excessive Internet users. *Journal of Affective Disorders, 109*(4), 165-169. doi:10.1029/0036-3578.43.1.34
- Lee, Z. W., & Cheung, C. M. (2014). Problematic use of social networking sites: The role of self-esteem. *International Journal of Business and Information, 9*(2), 143-159. Retrieved from www.knowledgetaiwan.org/ojs/index.php/ijbi/article/viewFile/420/129
- Lehenbauer-Baum, M., Klaps, A., Kovacovsky, Z., Witzman, K., Zahlbruckner, R., & Stetina, B. (2015). Addiction and engagement: An explorative study toward classification criteria for Internet Gaming Disorder. *Cyberpsychology, Behavior, and Social Networking, 18*(6), 343-349. doi:10.10230/01147-4689.54.2.45
- Lei, L., & Wu, Y. (2007). Adolescents' paternal attachment and Internet use. *Cyberpsychology and Behavior, 10*(2), 633-639. doi:10.1073/3a0009153
- Leung, L. (2004). Net-generation attributes and seductive properties of the Internet as predictors of online activities and Internet addiction. *Cyberpsychology and Behavior, 7*(1), 333-348. doi:10.1047/0037-3558.46.1.23
- Levy, B. R., Chung, P. H., Bedford, T., & Navrazhina, T. (2014). Facebook as a site for negative age stereotypes. *Gerontologist, 54*(2), 172-176. doi:10.1093/geront/gns194

- Levy, J., & Strombeck, R. (2002). Health benefits and risks of the Internet. *Journal of Medical Systems, 26*(2), 495-510. doi:10.1025/0034-2468.w4.1.33
- Li, L. (2010). Exploration of adolescents' Internet addiction. *Psychological Development and Education, 26*(2), 16-20. doi:10.1046/0056-3344.34.1.33
- Li, S., & Chung, T. (2006). Internet function and Internet addictive behavior. *Computers in Human Behavior, 22*(4), 1067-1071. doi:10.1086/0098-0464.67.1.36
- Lin, C., & Wu, C. (2009). The effects of parental monitoring and leisure boredom on adolescents' Internet addiction. *Adolescence, 44*(176), 993-1004.
doi:10.1078/0064-3346.36.1.85
- Lin, F., Zhou, Y., Du., Y., Qin, L., Zhao, Z., Xu, J., & Lei, H. (2012). Abnormal white matter integrity in adolescents with Internet addiction disorder: A tract-based spatial statistics study. *PLoS ONE, 7*(1), 1-10. doi:10.1086/0064-7370.56.1.856
- Lin, S. S. J., & Tsai, C.-C. (2002). Sensation seeking and Internet dependence of Taiwanese high school adolescents. *Computers in Human Behavior, 18*(4), 411-426. doi:10.1016/S0747-5632(01)00056-5
- Liu, C. Y., & Kuo, F. Y. (2007). A study of Internet addiction through the lens of the interpersonal theory. *Cyberpsychology and Behavior, 10*(6), 799-804.
doi:10.1064/0087-5338.53.1.86
- Liu, J., Gao, X. P., Osunde, I., Li, X., Zhou, S. K., Zheng, H. R., & Li, L. J. (2010, July). Increased regional homogeneity in Internet addiction disorder: A resting state functional magnetic resonance imaging study. *Chinese Medical Journal, 123*(14), 1904-1908. doi:10.10i88/00276-7566.77.1.85

- Livesley, W. J. (1984). Criteria for the diagnosis of personality disorder: A comparison of behavioral and dispositional prototypes. Paper presented at the Canadian Psychiatric Association Annual Meeting, Banff.
- Lu, D. W., Wang, J. W., & Huang, A. C. W. (2010). Differentiation of Internet addiction risk level based on autonomic nervous responses: The Internet-addiction hypothesis of autonomic activity. *Cyberpsychology, Behavior, and Social Networking*, *13*(4), 371-378. doi:10.1089/cyber.2009.0254
- Luarn, P., Kuo, H. C., Chiu, Y. P., & Chang, S. C. (2015). Social support on Facebook: The influence of the strength and gender differences. *International Journal of Electronic Commerce Studies*, *6*(1), 37-50. doi:10.7907/ijecs.1391
- Magnuson, M. J. & Dundes, L. (2008). Gender differences in "social portraits." *Cyberpsychology and Behavior*, *11*(2), 239-241. doi:10.1089/cpb.2007.0089
- Maheu, M. (August 22, 2002). *Cyber infidelity and other internet-related problems*. Proceedings of the American psychological association 110th annual convention, Chicago. Retrieved from <http://www.fenichel.com/APALive2002.shtml>
- Manago, A., Ward, L., Lemn, K., & Reed, L. (2015). Facebook involvement, objective body consciousness, body shape, and sexual assertiveness in college women and men. *Sex Roles*, *1*(2), 1-14. doi:10.1007/s11199-014-0441-1
- Marks, I. (1990). Behavioral (non-chemical) addictions. *British Journal of Addictions*, *85*(6), 1389-1394. doi:10.1087/0009-9877.87.1.98
- Massing, M. (July 24, 2000). Seeing drugs as a choice or as a brain anomaly. *New York Times*. Retrieved from <http://www.nytimes.com/2000/06/24/arts/seeing-drugs-as-a-choice-or-as-a-brain-anomaly.html>

- Matsunaga, M. (2010). How to factor analyze your data right: Do's, don'ts, and how-to's. *International Journal of Psychological Research*, 3(1), 97-110. Retrieved from <http://www.redalyc.org/articulo.oa?id=299023509007>
- McAndrew, F. T., & Jeony, H. S. (2015). Who does what on Facebook? Age, sex, and relationship status as predictors of Facebook use. *Computers in Human Behavior*, 28(6), 172-176. doi:10.1016/j.chb.2012.07.007
- McCrae, R. R., & John, O. P. (1992). An introduction to the five factor model and its applications. *Journal of Personality*, 60(5), 175-215. doi:10.1088/0077-9877y.76.1.87
- McIlwraith, R., Jacobvitz, R. S., Kubey, R., & Alexander, A. (1991). Television addiction: Theories and data behind the ubiquitous metaphor. *American Behavioral Scientist*, 35(3), 104-121. doi:10.1043/0054-976t5.64.1.75
- McKinney, B. C., Kelly, L., & Duran, R. L. (2012). Narcissism or openness?: College students' use of Facebook and Twitter. *Communication Research Reports*, 29(2), 108-118. doi:10.1080/08824096.2012.666919
- Meade, A. W., & Craig, S. B. (2012). Identifying careless responses in survey data. *Psychological Methods*, 9(3), 1-19. doi:10.1037/a0028085
- Mehdizadeh, S. (2010). Self-presentation 2.0: Narcissism and self-esteem on Facebook. *Cyberpsychology, Behavior, and Social Networking*, 13(2), 357-364. doi:10.10w22/0028776t5.65.1.86

- Menon, I. S., Sharma, M. K., Chandra, P. S., & Thennarsu, K. (2014). Social networking sites: An adjunctive treatment modality for psychological problems. *Indian Journal of Psychological Medicine*, *36*(3), 360-263. doi:10.4103/0253-7176.135374
- Mentzoni, R. A., Brunborg, G. S., Molde, H., Merest, H., Skouveroe, K. J. M., Hetland, J., & Pallesen, S. (2011). Problematic video game use, estimated prevalence, and associations with mental and physical health. *Cyberpsychology, Behavior, and Social Networking*, *14*(1), 591-596. doi:10.10764/0065-8765.76.1.97
- Meshi, D., Morawetz, C., & Heckeren, H. R. (2013). Nucleus accumbens response to gains in reputation for the self relative to gains for others predicts social media use. *Frontiers in Human Neuroscience*, *7*, 439. doi:10.3389/fnhum.2013.00439
- Meyer, R. G., & Deitsch, S. E. (1996). *The clinician's handbook: Integrated diagnostics, assessment, and intervention in adult and adolescent psychopathology* (4th ed.). Needham Heights, MA: Allyn & Bacon.
- Milani, L., Osualdella, D., & Di Blasio, P. (2009). Quality of interpersonal relationships and problematic Internet use in adolescence. *Cyberpsychology and Behavior*, *12*(6), 681-684. doi:10.1075/0098-456r4.65.1.98
- Miller, J. D., & Campbell, W. K. (2008). Comparing clinical and social personality conceptualizations of narcissism. *Journal of Personality*, *76*(2), 449-476. doi:10.15677/0099-8777.544.1.76
- Miller, J. D., Campbell, W. K., & Plickonis, P. (2007). Narcissistic personality disorder: Relations with distress and functional impairment. *Comprehensive Psychiatry*, *48*(3), 170-177. doi:10.1099/002778-3514.82.1.98

- Miller, J. D., Dir, A., Gentile, B., Wilson, L., Pryor, L. R., & Campbell, W. K. (2010). Searching for a vulnerable dark triad: Comparing factor 2 psychopathology, vulnerable narcissism, and borderline personality disorder. *Journal of Personality, 78*(4), 1529-1564. doi:10.10e7/007655-37544.8788.1.765
- Miller, J. D., Hoffman, B. J., Gaughan, E. T., Gentile, B., Maples, J., & Campbell, W. K. (2011). Grandiose and vulnerable narcissism: A nomological networking analysis. *Journal of Personality, 79*(5), 1013-1042. doi:10.1111/j.1467-6494.2010.00711.x
- Millon, T. (1981). *Disorders of personality (DSM-III: Axis II)*. New York, NY: Wiley.
- Mitchell, P. (2000). Internet addiction: Genuine diagnosis or not? *The Lancet, 355*(5), 632. doi:10.10098/00988-39987.766.1.98
- Molde, H., Pallesen, S., Bartone, P., Hystad, S., & Johnsen, B. H. (2009). Prevalence and correlates of gambling among 16- to 19-year-old adolescents in Norway. *Scandinavian Journal of Psychology, 50*(6), 55-64. doi:10.1128/002re-34567.76.1.99
- Mooney, C. (2009). *Online social networking*. Detroit, MI. Gale Cengage Learning.
- Morahan-Martin, J. (2005). Internet abuse. *Social Science Computer Review, 23*(6), 39-48. doi:10.10655/00444-3553.55.1.55
- Morahan-Martin, J. M., & Schumacher, P. (2000). Incidence and correlates of pathological Internet use among college students. *Computers in Human Behavior, 16*(5), 13-29. doi:10.1016/S0747-5632(99)00049-7
- Mottram, A. J., & Fleming, M. J. (2009). Extraversion, impulsivity, and online group membership as predictors of problematic Internet use. *Cyberpsychology and Behavior, 12*(3), 319-321. doi:10.1019/cyber.2008.0223

- Muise, A., Christofides, E., & Desmarais, S. (2013). "Creeping" or just information seeking? Gender differences in partner monitoring in response to jealousy on Facebook. *Personal Relationships, 21*(1), 35-50. doi:10.1111/pere.12014
- Munteanu, A., Costea, I., Palos, R., & Jinaru, A. (2009). Psychological and behavior aspects regarding Internet addiction. *Annals of DAAAM for 2009 and Proceedings of the 20th International DAAAM Symposium, 20*(1), 1477-1478.
- Murali, V., & George, S. (2007). Lost online: An overview of Internet addiction. *Advances in Psychiatric Treatment, 13*(5), 24-30. doi:10.1192/apt.bp.106.002907
- Murray, B. (1996). Computer addictions entangle students. *Monitor on Psychology, 27*(6), 38-39. doi:10.1016/j.apa.1995.08.006
- Mythily, S. (2014). Rethinking Internet gaming: From recreation to addiction. *British Journal of Addiction, 109*(9), 1407-1408. doi:1038/10.1111/add.12534
- Nadkarni, A., & Hofmann, S. G. (2012). Why do people use Facebook? *Personality and Individual Differences, 52*(2), 243-249. doi:10.1016/j.paid.2011.11.007
- Nalwa, K., & Anand, A. P. (2003). Internet addiction in students: A cause of concern. *Cyberpsychology and Behavior, 6*(3), 653-656.
doi:10.1089/109493103322725441
- Nef, T., Ganea, R. L., Muri, R. M., & Mosimann, U. P. (2013). Social networking sites and older users – a systematic review. *International Psychogeriatrics, 25*(7) 1041-1053. doi:10.102234/0076-37544.65.1.98

- Neimz, K., Griffiths, M., & Banyard, P. (2005). Prevalence of pathological Internet use among university students and correlations with self-esteem, the General Health Questionnaire (GHQ), and disinhibition. *Cyberpsychology and Behavior*, 8(6), 562-570. doi:10.1111/j.1460-2466.1996.tb01462.x
- Neslihan, O., & Sevim, B. (2005). An assistive tool in determining problematic Internet use: Validity and reliability of the 'Online Cognition Scale' in a sample of university students. *Bağimlik Dergisi*, 6(1), 19-26. doi:10.1045/0e42-35234.54.1.86
- Ni, X., Yan, H., Chen, S., & Liu, Z. (2009). Factors influencing Internet addiction in a sample of freshman university students in China. *Cyberpsychology and Behavior*, 12(6), 327-330. doi:10.1078/cyber.2008.0229
- Nie, N. H., & Erbring, L. (2002). Internet and society: A preliminary report. *IT and Society*, 1(1), 275-283. doi:10.1034/0044-5477.87.1.87
- Odaci, H., & Kalkan, M. (2010). Problematic Internet use, loneliness and dating anxiety among young adult university students. *Computers and Education*, 55(3), 1091-1097. doi:10.1016/j.compedu.2010.05.006
- Ong, E. Y. L., Ang, R. P., Ho, J. C. M., Lim, J. C. Y., Goh, D. H., Lee, C. S., & Chua, A. Y. K. (2011). Narcissism, extraversion and adolescents' self-presentation on Facebook. *Personality and Individual Differences*, 50(5), 180-185. doi:10.1055/0065-3578.98.1.97
- O'Reilly, M. (1996). Internet addiction: A new disorder enters the medical lexicon. *Canadian Medical Association Journal*, 154(4), 1882-1883. doi:10.1067/0056-2455.75.1.45

- Pabian, S., DeBacker, C. J. S., & Vandebosch, H. (2015). Dark triad personality traits and adolescent cyber-aggression. *Personality and Individual Differences, 75*, 41-46. doi:10.1016/j.paid.2014.11.015
- Pall, C. B. (2014). Personality disorder in Statistical Manual for Diagnostic Disorders-5: Back to the past or back to the future. *Current Opinion in Psychiatry, 27*(1), 84-86. doi:10.1097/YCO.0000000016
- Pallanti, S., Bernardi, S., & Quercioli, L. (2006). The Shorter PROMIS Questionnaire and the Internet Addiction Scale in the assessment of multiple addictions in a high-school population: Prevalence and related disability. *CNS Spectrums, 11*(12), 966-974. doi:10.1054/0098-7544.87.1.65
- Panayides, P., & Walker, M. J. (2012). Evaluation of the psychometric properties of the Internet Addiction Test (IAT) in a sample of Cypriot High School students: The Rasch Measurement perspective. *Europe's Journal of Psychology, 8*(3), 327-351. doi:10.5964/ejop.v8i3.474
- Paradise, A., & Sullivan, M. (2012). Invisible threats? The third person effect in perceptions of the influence of Facebook. *Cyberpsychology, Behavior, and Social Networking, 15*(1), 55-60. doi:10.1089/cyber.2011.0054
- Park, H. S., Kim, S. H., Bang, S. A., Yoon, E. J., Cho, S. S., & Kim, S. E. (2010). Altered regional cerebral glucose metabolism in Internet game over users: A 18F-fluorodeoxyglucose positron emission tomography study. *CNS Spectrums, 15*(3), 159-166. doi:10.1007/s12229-010-9187-1

- Park, S. K., Kim, J. Y., & Cho, C. B. (2008). Prevalence of Internet addiction and correlations with family factors among South Korean adolescents. *Adolescence*, 43(172), 895-909. doi:10.1067i/00879-5676.78.1.178
- Paulhus, D. L. (1998). Interpersonal and intrapsychic adaptiveness of trait self-enhancement: A mixed blessing? *Journal of Personality and Social Psychology*, 74(3), 1197-1208. doi:10.10879/0067-35676.678.1.768
- Pelling, E. L., & White, K. M. (2009). The theory of planned behavior applied to young people's use of social networking web sites. *Cyberpsychology and Behavior*, 12(2), 755-759. doi:10.1012/cyber.2008.0987
- Percy, L. (1976) An argument in support of ordinary factor analysis of dichotomous variables. *Advances in Consumer Research*, 3(1), 143-148. Retrieved from <http://www.acrwebsite.org/search/view-conference-proceedings.aspx?Id=9189>
- Petersen, K. U., Weymann, N., Schelb, Y., Thiel, R., & Thomasius, R. (2009). Pathological Internet use—epidemiology, diagnostics, co-occurring disorders and treatment. *Fortschritte der Neurologie-Psychiatrie*, 77(5), 263-271. doi:10.1067/0068-3768.6879.1.78
- Petrie, H., & Gunn, D. (1998, December). Internet “addiction”: The effects of sex, age, depression, and introversion. Presented at the British Psychological Society London Conference, London, England.
- Pettijohn, T. F., LaPiene, K. E., Pettijohn, T. F., & Horting, A. L. (2012). Relationship between Facebook intensity, friendship contingent self-esteem, and personality in U.S. college students. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 6(1), Article 1. doi:10.5817/CP2012-1-2

- Phanasathit, M., Manwong, M., Hanprathet, N., Khumsri, J., & Yingyeun, J. (2015). Validation of the Thai version of the Bergen Facebook Addiction Scale (Thai-BFAS). *Journal of the Medical Association of Thailand*, 98(2), 108-117.
doi:10125-2208.01252208
- Pies, R. (2008). Major depression after recent loss is major depression—until proved otherwise. *Psychiatric Times*, 25(1), 6-9. doi:10.10567/007-35656.678.1.789
- Pies, R. (2009). Should DSM-V designate “Internet addiction” a mental disorder? *Psychiatry*, 6(2), 31-37. doi:10.1089/00789-3689789.789.1.78
- Piff, P. K. (2014). Wealth and the inflated self: Class, entitlement, and narcissism. *Personality and Social Psychology Bulletin*, 40(1), 34-43.
doi:10.117710146167213501699
- Pigott, T. D. (2001). A review of methods for missing data. *Educational Research and Evaluation*, 7(4), 353-383. doi:1380-3611/01/0704-3353
- Plumer, B. (2013). Here’s all the stuff that supposedly costs us billions in ‘lost Productivity. Retrieved from
<http://www.washingtonpost.com/blogs/wonkblog/wp/2013/07/06/here-are-all-the-things-that-supposedly-cost-the-u-s-billions-in-lost-productivity/>
- Pocius, K. E. (1991). Personality factors in human-computer interaction: A review of the literature. *Computers in Human Behavior*, 7(2), 103-135. doi:10.10789/00768-5346t5e.yi7.1.8
- Poe, R., & Courter, C. L. (1997). Surf’s up, productivity’s down. *Across the Board*, 34(1), 5. doi:10.1078/007y8-67.678.1.68

- Porter, K., Mitchell, J., Grace, M., Shinosky, S., & Gordon, V. (2012). A study of the effects of social media use and addiction on relationship satisfaction. *Meta-communicate*, 2(1). doi:10.10768/007i-565.678.1.67
- Pratarelli, M. E., Browne, B. L., & Johnson, K. (1999). The bits and bytes of computer/Internet addiction: A factor analysis approach. *Behavior Research Methods, Instruments, and Computers*, 31(2), 305-314. doi:10.16u7/0io2-35656.678.1.980
- Raacke, J., & Bonds-Raacke, J. (2008). MySpace and Facebook: Applying the uses and gratifications theory to exploring friend-networking sites. *Cyberpsychology and Behavior*, 11(3), 169-174. doi:10.1056/cyber.2009.7842
- Raskin, R. A., & Hall, C. S. (1979). The Narcissistic Personality Inventory. *Psychological Reports*, 45(5), 159-161. doi:10.1056/00567-355465.879.1.98
- Raskin, R. N., & Hall, C. S. (1981). The Narcissistic Personality Inventory: Alternate form reliability and further evidence of construct validity. *Journal of Personality Assessment*, 45(2), 159-162. doi:10.1016/j.2261-2091.1980.tb05003
- Raskin, R. A., & Novacek, J. (1989). An MMPI description of the narcissistic personality. *Journal of Personality Assessment*, 53(4), 66-80. doi:10.1067/00675-68767.678.1.87
- Raskin, R. A., Novacek, J., & Hogan, R. (1991). Narcissism, self-esteem and defensive self-enhancement. *Journal of Personality*, 59(5), 19-38. doi:10.10890/00890-67878.87.1.980
- Raskin, R. N., & Shaw, R. (1988). Narcissism and the use of personal pronouns. *Journal of Personality*, 56(4), 394-404. doi:10.10768/00890-78978.98.1.980

- Raskin, R. N., & Terry, H. (1988). A principal-components analysis of the Narcissistic Personality Inventory and further evidence of its construct validity. *Journal of Personality and Social Psychology*, *54*(3), 890-902.
doi:10.10879/00y789yuy84.678.1.ty8
- Rheingold, H. (1993). *The virtual community: Homesteading on the electric frontier*. Cambridge, MA: MIT.
- Robins, R. W., & Pervin, L. A. (Eds.), *Handbook of personality: Theory and research* (3rd ed.). New York, NY: Guilford Press.
- Rosen, C. (2007). Virtual friendship and the new narcissism. *The New Atlantis*, *17*(2), 15-31. Retrieved from <http://www.thenewatlantis.com/docLib/TNA17-Rosen.pdf>
- Rosen, L. D., Whaling, K., Rab, S., Carrier, L. M., & Cheever, N. A. (2013). Is Facebook creating “iDisorders?” The link between clinical symptoms of psychiatric disorders and technology use, attitudes and anxiety. *Computers in Human Behavior*, *29*(3), 1243-1254. doi:10.10678/00789-456t5.yui.1.789
- Ross, C., Orr, E. S., Sisic, M., Arseneault, J. M., Simmering, M. G., & Orr, R. R. (2009). Personality and motivations associated with Facebook use. *Computers in Human Behavior*, *25*(1), 578-586. doi:10.1024/00243-3879u9.980.1.980
- Russ, E., Shedler, J., Bradley, R., & Western, D. (2008). Refining the construct of Narcissistic Personality Disorder: Diagnostic criteria and subtypes. *American Journal of Psychiatry*, *165*(6), 1473-1481. doi:10.10567/00890-354645.657.1.r67
- Ryan, T., & Xenos, S. (2011). Who uses Facebook? An investigation into the relationship between the Big Five, shyness, narcissism, loneliness, and Facebook usage. *Computers in Human Behavior*, *27*(5), 1658-1664. doi:10.1016/chb.2011.02.004

- Satici, S., & Uysal, R. (2015). Well-being and problematic Facebook use. *Computers in Human Behavior, 8*(15), 185-190. doi:10.1016/j.chb.2015.03.005
- Schallow, J., & McIlwraith, R. (1986). Is television viewing really bad for your imagination? Content and process of TV viewing and imaginal styles. *Imagination, Cognition, and Personality, 6*(4), 25-42. doi:10.17687/00890-87978.789.1.89
- Scherer, K. (1997). College life online: Healthy and unhealthy Internet use. *Journal of College Student Development, 28*(6), 655-665. doi:10.102133/00324-87845.78.1.890
- Scherer, K., & Bost, J. (1997). *Internet use patterns: Is there Internet dependency on campus?* Paper presented at the 105th Annual Convention of the American Psychological Association, Chicago, IL.
- Schmitz, J. (2005). The interface between impulse-control disorders and addictions: Are pleasure pathway responses shared neurobiological substrates. *Sexual Addiction and Compulsivity, 12*(3), 149-168. doi:10.13247/0090213-56457.6.1.21
- Schoenfeld, D. (2011). *Prevalence and correlates of Internet addiction in undergraduate students as assessed by two different measures*. University at Albany, State University of New York.
- Seidman, G. (2013). Self-presentation and belonging on Facebook: How personality influences social media use and motivations. *Personality and Individual Differences, 54*(3), 402-407. doi:10.1016/j.paid.2012.10.009

- Seo, M., Kang, H. S., & Yom, Y. H. (2009). Internet addiction and interpersonal problems in Korean adolescents. *Computers, Informatics, Nursing: CIN*, 27(4), 226-233. doi:10.10217/00567-353243.123.1.68
- Shaffer, H. J. (1996). Understanding the means and objects of addiction: Technology, the Internet, and gambling. *Journal of Gambling Studies*, 12(2), 461-469. doi:10.1045/0034-12321.98.1.324
- Shaffer, H. J., LaPlante, D. A., LaBrie, R. A., Kidman, R. C., Donato, A. N., & Stanton, M. V. (2004). Toward a syndrome model of addiction: Multiple expression, common etiology. *Harvard Review of Psychiatry*, 12(1), 367-374. doi:10.10234/0034-243w4.32.1.12
- Shambare, R., Rugimbana, R., & Zhowa, T. (2012). Are mobile phones the 21st century addiction? *African Journal of Business Management*, 6(2), 573-577. doi:10.1012/0056-3514343.1.23
- Shapira, N. A., Goldsmith, T. D., Keck, P. E., Jr., Khosla, U. M., & McElroy, S. L. (2000). Psychiatric features of individuals with problematic Internet use. *Journal of Affective Disorders*, 57(6), 267-272. doi:10.1034/0034-32334.23.1.67
- Shapira, N. A., Lessig, M. C., Goldsmith, T. D., Szabo, S. T., Lazoritz, M., Gold, M. S., & Stein, D. J. (2003). Problematic Internet use: Proposed classification and diagnostic criteria. *Depression and Anxiety*, 17(4), 207-216. doi:10.10678/0r562-34324.243.1.23
- Shaw, M., & Black, D. W. (2008). Internet addiction: Definition, assessment, epidemiology and clinical management. *CNS Drugs*, 22(5), 353-365. doi:10.2165/00023210-200822050-00001

- Shlam, S., & Medalia, M. (January 19, 2014). China's web junkies. *New York Times*. Retrieved from http://www.nytimes.com/2014/01/20/opinion/chinas-web-junkies.html?_r=1
- Shotton, M. A. (1991). The costs and benefits of 'computer addiction.' *Behavior and Information Technology*, 10(5), 219-230. doi:10.1023/0087-353444.67.1.768
- Sidoti, P. M., & Devasagayam, R. (2010). Credit cards and college students: Effect of materialism and risk attitude on misuse. *The Marketing Management Journal*, 20(2), 64-79. doi:10.1023/j.2112-1912.2009.tb0124
- Simkova, B., & Cincera, J. (2004). Internet addiction disorder and chatting in the Czech Republic. *Cyberpsychology and Behavior*, 7(5), 536-539. doi:10.1089/1094931042403118
- Skiera, B., Hinz, O., & Spann, M. (2015). Social media and academic performance: Does the intensity of Facebook activity relate to good grades. *Social Media and Academic Performance*, 16(7) 54-72. Retrieved from http://www.sbr-online.de/pdfarchive/einzelne_pdf/sbr_2015_jan_054-072.pdf
- Smith, R. (1981). *Television viewing: A study of the habits and opinions of the citizens of Springfield, Massachusetts*. Unpublished questionnaire. Retrieved from http://scholarworks.umass.edu/cgi/viewcontent.cgi?article=2726&context=dissertations_1
- Smith, T. F. (2014). Computer and Internet use on the United States. *United States Census Bureau*. Retrieved from <http://www.census.gov/prod/2013pubs/p20-569.pdf>

- Song, I., Larose, R., Eastin, M., & Lin, C. (2004). Internet gratification and Internet addiction: On the uses and abuses of new media. *Cyberpsychology and Behavior*, 7(4), 384-394. doi:10.1036/cyber.2003.0459
- Sponcil, M., & Gitimu, P. (2012). Use of social media by college students: Relationship to communication and self-concept. *Journal of Technology Research*, 20(6), 51-56. doi:10.1027/18641105.20.2.67
- Srivastava, C., & Bhardwaj, A. (2014). Adverse effects of online social networking on children and adolescents. *Journal of Indian Association for Child and Adolescent Mental Health*, 10(2), 80-92. Retrieved from <http://www.jiacam.org/1002/editapril2014.pdf>
- Steers, M. N., Wickham, R. E., & Acitelli, L. A. (2014). Seeing everyone else's highlight reels: How Facebook usage is linked to depressive symptoms. *Journal of Social and Clinical Psychology*, 33(8), 701-731. doi:10.1521/jscp.2014.33.8.701
- Stefanone, M. A., Lackstaff, D., & Rosen, D. (2011). Contingencies of self-worth and social networking site behavior. *Cyberpsychology, Behavior, and Social Networking*, 14(1), 41-51. doi:10.1089/cyber.2010.0049
- Stern, S. E. (1999). Addiction to technologies: A social psychological perspective of Internet addiction. *Cyberpsychology and Behavior*, 2(5), 419-424. doi:10.1037/cyber.1998.0372
- Stieger, S., Burger, C., Bohn, M., & Voracek, M. (2013). Who commits virtual identity suicide? Differences in privacy concerns, Internet addiction, and personality between Facebook users and quitters. *Cyberpsychology, Behavior and Social Networking*. doi:10.1089/cyber.2012.0323

- Suganuma, N., Kikuchi, T., Yanagi, K., Yamamura, S., Morishima, H., Adachi, H.,...Takeda, M. (2007). Using electronic media before sleep can curtail sleep time and result in self-perceived insufficient sleep. *Sleep and Biological Rhythms*, 5(3), 204-214. doi:10.1037324/0023-12321.52341.23
- Suhail, K., & Bargees, Z. (2006). Effects of excessive Internet use on undergraduate students in Pakistan. *Cyberpsychology and Behavior*, 9(3), 297-307. doi:10.1089/cpb.2006.9.297
- Sun, D. L., Chen, Z. J., Ma, N., Zhang, X. C., Fu, X. M., & Zhang, D. R. (2009). Decision-making and prepotent response inhibition functions in excessive Internet users. *CNS Spectrums*, 14(2), 75-81. doi:10.1034/0034-23432.34.1.23
- Taber, B. J., Leibert, T. W., & Agaskar, V. R. (2011). Relationships among client-therapist personality congruence, working alliance, and therapeutic outcomes. *Psychotherapy*, 48(4), 376-380. doi:10.1037/a0022066
- Takao, M., Takahashi, S., & Kitamura, M. (2009). Addictive personality and problematic mobile phone use. *Cyberpsychology and Behavior*, 12(1), 501-507. doi:10.1039/cyber.2008.0473
- Tao, R., Huang, Q., Wang, J., Zhang, H., Zhang, Y., & Li, M. (2010). Proposed diagnostic criteria for Internet addiction. *Addiction*, 105(6), 556-564. doi:10.1111.j.1360-0443.2009.02828.8
- TeWildt, B. T., Putzig, I., Zedler, M., & Ohlmeier, M. D. (2007). Internet dependency as a symptom of depressive mood disorders. *Psychiatrische Praxis*, 34(Suppl 3), 318-322. doi:10.10rt6r/00223434.23.1.12

- Thatcher, A., & Goolam, S. (2005). Development and psychometric properties of the Problematic Internet Use Questionnaire. *South African Journal of Psychology*, 35(4), 793-809. doi:10.1023/00657-3435.324.1.56
- Thompson, S. H., & Lougheed, E. (2012). Frazzled by Facebook? An exploratory study of gender differences in social networking communication among undergraduate men and women. *College Student Journal*, 46(1), 88-98. doi:10.1090/00o54-455656.6u7y.56.6
- Toma, C. L., & Hancock, J. (January 28, 2011). *Affirming the self online: Motives and benefits of Facebook use*. Paper presented at the Annual Meeting of the International Communication Association, Boston, MA.
- Toma, C. L., & Hancock, J. (2013). Self affirmations underlie Facebook use. *Personality and Social Psychology Bulletin*, 39(3), 321-331. doi:10.1089/cyber.2012.0324
- Tong, S. T., Van Der Heide, B., Langwell, L., & Walther, J. B. (2008). Too much of a good thing? The relationship between number of friends and interpersonal impressions on Facebook. *Journal of Computer-Mediated Communication*, 13(5), 531-549. doi:10.1111/j.1083-6101.2008.00409.x
- Torgersen, S., Kringlen, E., & Cramer, V. (2001). The prevalence of personality disorders in a community sample. *Archives of General Psychiatry*, 58(6), 590-596. doi:10.10456/0078-676y.565.1.90
- Truer, T., Fabian, Z., & Furedi, J. (2001). Internet addiction associated with features of impulse control disorder: Is it a real psychiatric disorder? *Journal of Affective Disorders*, 66(4), 283. doi:10.10234/00435-3232.21w.1.90

- Trzesniewski, K. H., Donnellan, M. B., & Robbins, W. (2008a). Do today's young people really think they are so extraordinary? An examination of secular trends in narcissism. *Psychological Science, 19*(3), 181-188. doi:10.1023/0023-24234.32.1.546
- Trzesniewski, K. H., Donnellan, M. B., & Robbins, W. (2008b). Is "generation me" really more narcissistic than previous generations? *Journal of Personality, 76*(2), 903-918. doi:10.2185/00726250-204832251-00203
- Tsai, C., & Lin, S. (2003). Internet addiction of adolescents in Taiwan: An interview study. *Cyberpsychology and Behavior, 6*(6), 649-652. doi:10.1089/109493103322725432
- Tsai, H. F., Cheng, S. H., Yeh, T. L., Shih, C. C., Chen, K. C., Yang, Y. C., & Yang, Y. K. (2009). The risk factors of Internet addiction: A survey of university freshmen. *Psychiatry Research, 167*(3), 294-299. doi:10.10234/0056-2323.46.1.67
- Tsitsika, A., Critselis, E., Kormas, G., Filippopoulou, A., Tounissidou, D., Freskou, A., ... Kafetzis, D. (2009). Internet use and misuse: A multivariate regression analysis of the predictive factors of Internet use among Greek adolescents. *European Journal of Pediatrics, 168*(6), 655-665. doi:10.1007/s00431-008-0811-1
- Tufekci, Z. (2008). Can you see me now? Audience and disclosure regulation in online social networking sites. *Bulletin of Science, Technology, and Society, 28*(1), 20-36. doi:10.1020/213544254637886940

- Tunnell, G. (1984). The discrepancy between private and public selves: Public self-consciousness and its correlates. *Journal of Personality Assessment*, 48(5), 549-555. doi:10.1023/00234-13123.23.1.123
- Twenge, J. M., & Campbell, W. K. (2010). Birth cohort differences in the monitoring of future datasets and elsewhere: Further evidence for generation me. *Perspectives on Psychological Science* 1(5), 58-75. doi:10.1177/1745691609356789
- Twenge, J. M., & Foster, J. D. (2010). Birth cohort increases in narcissistic personality traits among American college students, 1982-2009. *Social Psychological Personality Science*, 1(1), 99-106. doi:10.1019/102433143526775839
- Twenge, J. M., Konrath, S., Foster, J. D., Campbell, W. K., & Bushman, B. J. (2008). Egos inflating over time: A cross-temporal meta-analysis of the narcissistic personality disorder. *Journal of Personality*, 76(2), 875-901. doi:10.1034/0023-2323.34.1.67
- U. S. Census Bureau (2013). *Population*. Retrieved from <http://www.census.gov/topics/population.html>
- VanDam, J. W., & VanDeVelden, M. (2015). Online profiling and classifying of Facebook users connected with companies. *Decision Support Systems*, 2(7), 60-72. doi:10.1016/j.dss.2014.12.001
- Vanden, E. R. J., Meerkerk, G. J., Vermulst, A. A., Spikerman, R., & Engels, R. C. (2008). Online communication, compulsive Internet use, and psychological well-being among adolescents: A longitudinal study. *Developmental Psychology*, 20(4), 20-28. doi:10.1037/0012-1649.44.3.655

- VandenBos, G. R. (Ed.). (2007). *APA dictionary of psychology*. Washington, DC: American Psychological Association.
- VanGelder, S. C. (2003). Internet addiction: Is the Internet a “pathological agent” includable as a disorder separate from other psychiatric diagnoses? *Journal of Addictive Disorders, 3*(11), 1-23. Retrieved from <http://www.breining.edu>
- VanVolkom, M., Stapley, J. C., & Amatur, V. (2014). Revisiting the digital divide: Generational differences in technology use in everyday life. *North American Journal of Psychology, 16*(3), 557-574. doi:10.1180/2958672615447392
- Vasalou, A., Joinson, A. N., & Courvoisier, D. (2010). Cultural differences, experience with social networkings and the nature of “true commitment” in Facebook. *International Journal of Human-Computer Studies, 17*(1), 719-728. doi:10.1016/j.ijhcs.2010.06.002
- Vazire, S., Naumann, L. P., Rentfrow, P. J., & Gosling, S. D. (2008). Portrait of a narcissist: Manifestations of narcissism in physical appearance. *Journal of Research in Personality, 42*(3), 1439-1447. doi:10.1016/j.jrp.2008.06.007
- Wagner, K. (2014). Eight ways Facebook changed the world. *Mashable*. Retrieved from <http://mashable.com/2014/02/04/facebook-changed-the-world/>
- Wallace, H. M., & Baumeister, R. F. (2002). The performance of narcissists rises and falls with perceived opportunity for glory. *Journal of Personality and Social Psychology, 82*(4), 819-834. doi:10.1179/1847661504336281
- Wallace, P. (1999). *The psychology of the Internet*. New York, NY: Cambridge University.

- Walther, J. B., & Reid, L. D. (2000). Understanding the allure of the Internet. *Chronicle of Higher Education*, 4(5), B4-B5. doi:10.10324/00546-343.324.1.23
- Walther, J. B., Van Der Heide, B., Kim, S.-Y., Westerman, D., & Tong, S. T. (2008). The role of friends' appearance and behavior on evaluations of individuals on Facebook: Are we known by the company we keep? *Human Communication Research*, 34(6), 28-49. doi:10.1111/j.1468-2958.2007.00312.x
- Wang, C., Ho, R., Chan, C., & Tse, S. (2015). Short communication: Exploring personality characteristics of Chinese adolescents with Internet related addictive behaviors: Trait differences for gaming addiction and social networking addiction. *Addictive Behavior*, 3(42), 32-35. doi:10.1016/j.addbeh.2014.10.039
- Wang, W. (2001). Internet dependency and psychosocial maturity among college students. *International Journal of Human-Computer Studies*, 55(6), 919-938. doi:10.10425/00425-353.33.1.647
- Ward, S., & Wackman, D. (1971). Family and media influences on adolescent learning. *American Behavioral Scientist*, 14(5), 415-427. doi:10.1078/0098-234w34.324.1.234
- Warden, N. L., Phillips, J. G., & Ogloff, J. P. (2004). Internet addiction. *Psychiatry, Psychology, and Law*, 11(2), 280-295. doi:10.10345/0046-35324.5267.23
- Watson, D. (1989). Strangers' ratings of the five robust personality factors: Evidence of a surprising convergence with self-report. *Journal of Personality and Social Psychology*, 57(3), 120-128. doi:10.10578/00546-er54.5567.1.56

- Watson, P. J., Grisham, S. O., Trotter, M. V., & Biderman, M. D. (1984). Narcissism and empathy: Validity evidence for the Narcissistic Personality Inventory. *Journal of Personality Assessment*, 48(2), 301-305. doi:10.10324/00324-343.23.1.546
- Weinstein, A., & Lejoyeux, M. (2010). Internet addiction or excessive Internet use. *The American Journal of Drug and Alcohol Abuse*, 36(4), 277-283.
doi:10.3109/00952990.2010.491880
- Weinstein, A. M. (2010). Computer and video game addiction: A comparison between game users and non-game users. *American Journal of Drug and Alcohol Abuse*, 5(36), 268-276. doi:10.3109/00952900.2010.49/879
- Weiser, E. (2001). The functions of Internet use and their social and psychological consequences. *Cyberpsychology and Behavior*, 4(2), 723-743.
doi:10.1056/cyber.2000.0382
- Weiser, E. B. (2000). Gender differences in Internet use patterns and internet application preferences: A two-sample comparison. *Cyberpsychology and Behavior*, 3(2), 167-178. doi:10.1077/cyber.3212.1594
- Whang, L. S., & Chang, G. (2004). Lifestyles of virtual world residents: Living in the online game "Lineage." *Cyberpsychology and Behavior*, 7(1), 592-600.
doi:10.1029/cyber.2009.0483
- Widyanto, L., & Griffiths, M. (2006). Internet addiction: A critical review. *International Journal of Mental Health and Addiction*, 4(2), 31-51. doi:10.1007/s11469-006-9009-9

- Widyanto, L., & McMurrin, M. (2004). The psychometric properties of the Internet Addiction Test. *Cyberpsychology and Behavior*, 7(4), 443-450.
doi:10.1083/cyber.2003.0732
- Wieland, D. (2005). Computer addiction: Implications for nursing psychotherapy practice. *Perspectives in Psychiatric Care*, 41(3), 153-161.
doi:10.3105/006572899.2004.471889
- Wiggins, J. S. (1996). *The five-factor model of personality: Theoretical perspectives*. New York, NY: Guilford.
- Wilson, K., Fornasier, S., & White, K. M. (2010). Psychological predictors of young adults' use of social networking sites. *Cyberpsychology, Behavior, and Social Networking*, 13(4), 173-176. doi:10.1089/cyber.2009.0094
- Wilson, R. E., Gosling, S. D., & Graham, L. T. (2012). A review of Facebook research in the social sciences. *Perspectives of Psychological Science*, 7(3), 203-220.
doi:10.1177/1745691614222904
- Wink, P. (1991). Two faces of narcissism. *Journal of Personality and Social Psychology*, 61(5), 590-597. doi:10.10678/0067-3454.98.1.09
- Woelfling, K., Buhler, M., Lemenager, T., Mairsen, C., & Mann, K. (2009). Gambling and Internet addiction: Review and research agenda. *Der Nervenarzt*, 80(9), 1030-1039. doi:10.1787/00789-567t7.89.1.e45
- Wolniczak, I., Alonso Caceres-Del Aguila, J., Palma-Ardiles, G., Arroyo, K. J., Solis-Visscher, R., Paredes-Yauri, S.,...Bernabe-Ortiz, A. (2013). Association between Facebook dependence and poor sleep quality: A study in a sample of undergraduate students in Peru. *PLoS One*, 8(3). doi:10.1034/00343-565.89.1.768

- Wright, K. B. (2012). Emotional support and perceived stress among college students using Facebook.com: An exploration of the relationship between source perceptions and emotional support. *Communication Research Reports*, 29(3), 175-184, doi:10.10801.08824096.2012.695957
- Xiuqin, H., Huimin, Z., Mengchen, L., Jinan, W., Ying, Z., & Ran, T. (2010). Mental health, personality, and parental rearing styles of adolescents with Internet addiction disorder. *Cyberpsychology, Behavior, and Social Networking*, 13(4), 401-406. doi:10.1089/cyber.2009.0222
- Xu, J., Shen, L. X., Yan, C. H., Wu, Z. Q., Ma, Z. Z., Jin, X. M., & Shen, X. M. (2008). Internet addiction among Shanghai adolescents: Prevalence and epidemiological features. *Zhonghua Yu Fang Yi Zue Za Zhi*, 42(6), 735-738. doi:10.1017u/0090-8678.89.1.u67
- Yang, S., & Tung, C. (2007). Comparison of Internet addicts and non-addicts in Taiwanese high school. *Computers in Human Behavior*, 23(1), 79-96. doi:10.10234/00980-3435.34.1.78
- Yen, C. F., Ko, C. H., Yen, J. Y., Chang, Y. P., & Cheng, C. P. (2009). Multi-dimensional discriminative factors for Internet addiction among adolescents regarding gender and age. *Psychiatry and Clinical Neurosciences*, 63(2), 357-364. doi:10.1111/j.1440-1819.2009.01969.x
- Yen, J. Y., Ko, C. H., Yen, C. F., Chen, C. S., & Chen, C. C. (2009). The association between harmful alcohol use and Internet addiction among college students: Comparison of personality. *Psychiatry and Clinical Neurosciences*, 63(2), 218-224. doi:10.1023/0034-3232.523.1.123

- Yen, J. Y., Ko, C. H., Yen, C. F., Wu, H., & Yang, M. (2007). The comorbid psychiatric symptoms of Internet addiction: Attention deficit and hyperactivity disorder, depression, social phobia, and hostility. *Journal of Adolescent Health, 41*(6), 93-98. doi:10.1016/j.jadohealth.2007.02.002
- Yesil, M. M. (2014). The relationship between Facebook use and personality traits of university students. *International Journal of Academic Research, 6*(2), 75-80. doi:10.7813/2075-4124.2014/6-2/b.12
- Yoo, H. J., Cho, S. C., Ha, J., Yune, S. K., Kim, S. J., Hwang, J.,...Lyoo, I. K. (2004). Attention deficit hyperactivity symptoms and Internet addiction. *Psychiatry and Clinical Neurosciences, 58*(5), 487-494. doi:10.1111/j.1440-1819.2004.01290.x
- Young, K. S. (1996). Psychology of computer use: Addictive use of the Internet, a case that breaks the stereotype. *Psychological Reports, 79*(3), 899-902. doi:10.1023/0013-32123.34.1.q13
- Young, K. S. (August 15, 1997). *What makes the Internet addictive: Potential explanations for pathological Internet use*. Paper presented at the 105th annual conference of the American Psychological Association, Chicago, IL.
- Young, K. S. (1998a). Caught in the net: How to recognize the signs of Internet addiction and a winning strategy for recovery. New York, NY: John Wiley & Sons, Inc.
- Young, K. S. (1998b). Internet addiction: The emergence of a new clinical disorder. *Cyberpsychology and Behavior, 1*(3), 237-244. doi:10.1089/cpb.1998.1.237
- Young, K. S. (1998c). The relationship between depression and Internet addiction. *Cyberpsychology and Behavior, 1*(4), 25-28. doi:10.1092/cyber.1997.0653

- Young, K. S. (1999). Internet addiction: Symptoms, evaluation, and treatment. In L. VandeCreek & T. L. Jackson (Eds.), *Innovations in clinical practice* (Vol. 17, pp.19-31). Sarasota, FL: Professional Resource Press. Retrieved from <http://www.netaddiction.com/articles/symptoms.pdf>
- Young, K. S. (2007). Cognitive behavior therapy with Internet addicts: Treatment outcomes and implications. *Cyberpsychology and Behavior*, *10*(6), 671-679. doi:10.1039/cyber.2006.0935
- Young, K. S., Cooper, A., Griffiths-Shelley, E., O'Mara, J., & Buchanan, J. (2000). Cybersex and infidelity online: Implications for evaluation and treatment. *Sexual Addiction and Compulsivity*, *7*(10), 59-74. Retrieved from <http://www.netaddiction.com/articles/cyberaffairs.pdf>
- Young, K. S., Pistner, M., O'Mara, J., & Buchanan, J. (1999). Cyber-disorders: The mental health concern for the new millennium. *Cyberpsychology and Behavior*, *3*(5), 475-479. Retrieved from <http://www.netaddiction.com/articles/cyberdisorders.pdf>
- Young, K. S., & Rodgers, R. C. (April, 1998a). *Internet addiction: Personality traits associated with its development*. Paper presented at the 69th annual meeting of the Eastern Psychological Association. Boston, MA. Retrieved from http://www.netaddiction.com/articles/personality__correlates.pdf
- Young, K. S., & Rodgers, R. C. (1998b). The relationship between depression and pathological Internet use. *Cyberpsychology and Behavior*, *1*(1), 25-28. doi:10.1035/cyber.1997.0836

- Young, S. M., & Pinsky, D. (2006). Narcissism and celebrity. *Journal of Research in Personality, 40*(5), 463-471. doi:10.10234/0023-234324.23.1.3231
- Yuan, K., Qin, W., Wang, G., Zeng, F., Zhao, L., Yang, X.,... Tian, J. (2011, June). Microstructure abnormalities in adolescents with Internet addiction disorder. *PLoS One, 6*(1), 1. doi:10.1034/0034-1321.34.1.234
- Zhou, S. X. (2012). Gratifications, loneliness, leisure boredom, and self-esteem as predictors of SNS-game addiction and usage pattern among Chinese college students. *International Journal of Cyber Behavior, Psychology and Learning, 2*(4), 34-48. doi:10.4018/ijcbpl.2012100103
- Zhou, Y., Lin, F. C., Du, Y. S., Qin, L. D., Zhao, Z. M., Xu, J. R., & Lei, H. (2011). Gray matter abnormalities in Internet addiction: A voxel-based morphometry study. *European Journal of Radiology 79*(1), 92-95. doi:10.1016/j.ejrad.2009.10.025