PROBLEMATIC USE OF ONLINE SOCIAL NETWORKING SITES FOR COLLEGE STUDENTS: PREVALENCE, PREDICTORS, AND ASSOCIATION WITH WELL-BEING

By

ANDREA SPRAGGINS

A DISSERTATION PRESENTED TO THE GRADUATE SCHOOL
OF THE UNIVERSITY OF FLORIDA IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA

2009

ACKNOWLEDGMENTS

I would like to express my appreciation to a number of people for supporting me in my dissertation. First, I would like to thank my advisor, Dr. Greg Neimeyer, for all of his guidance and support of this project. Thanks also go to the members of my committee, Dr. Sondra Smith, Dr. Jim Morgan, and Dr. Jeff Farrar, who gave their valuable time to this project. My parents and family also have my deepest appreciation for all of their support and love which helped get me to this place and continues to keep me grounded. Most important, I thank my husband, Barrett Spraggins, who has been my rock throughout graduate school. Barrett continues to be my biggest supporter and I appreciate him dearly.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Abstract of Dissertation Presented to the Graduate School
of the University of Florida in Partial Fulfillment of the
Requirements for the Degree of Doctor of Philosophy

PROBLEMATIC USE OF ONLINE SOCIAL NETWORKING SITES FOR COLLEGE STUDENTS: PREVALENCE, PREDICTORS, AND ASSOCIATION WITH WELL-BEING

By

Andrea Spraggins

August 2009

Chair: Gregory Neimeyer
Major: Counseling Psychology

Social networking sites like MySpace and Facebook have become such a popular communication application on the Internet that these sites are now some of the most-trafficked websites in the world. Though use of social networking sites has become widespread, little research has been conducted about these sites and their impact on users. Our study attempted to partially address this gap in the literature by examining social networking site use among college students, specifically when the utilization of these types of sites becomes problematic or addictive. Researchers have begun finding evidence for the existence of Internet addiction or problematic use of the Internet in general. However, specific Internet applications which may hold addictive potential have been rarely researched, with the exception of online gambling and gaming. Given the popularity of social networking sites, the aims of our study were to determine if problematic use of social networking sites can develop, and to investigate some possible predictors of problematic use, including social anxiety and a lack of belonging to an offline social network. The less-threatening social environment that social networking sites offer compared to face-to-face interactions may make these sites particularly seductive for socially anxious individuals lacking friends. The relationship of problematic social networking site use with well-being was also examined in this study. An online survey was completed by 367

undergraduates, a majority of which identified themselves as social networking site users. Our study found evidence for the existence of problematic social networking site use by utilizing a measure modified from an existing measure of general problematic Internet use. Social anxiety was found to be positively related with problematic use, but our study failed to find support for lack of belonging to an offline social network as another predictor. However, a model placing loneliness as a mediator of the relationship between social anxiety and problematic use was supported. Finally, our study found evidence for a link between problematic use and well-being. Increased symptoms of problematic use were associated with decreased self-esteem, happiness, satisfaction with life, and increased depression and loneliness.

CHAPTER 1
INTRODUCTION

The need for friendships is a natural part of human existence (Baumeister and Leary, 1995) and the Internet is a pervasive part of our culture, so it is no surprise that the Internet has become a source for making friends and maintaining relationships. Social networking sites are the most recent technological creation on the Internet that serve this purpose. MySpace and Facebook, two of the most popular online social networking sites, have become an international phenomenon and an important part of how adolescents and young adults communicate with one another. Though use of social networking sites has become widespread, little research has been conducted on the usage and impact of these sites. Our study attempted to partially address this gap in the literature by examining social networking site use among college students, specifically when the utilization of these types of sites becomes problematic or addictive.

Like social networking sites, problematic Internet use (PIU), or Internet addiction as it is called by some researchers, is a relatively new phenomenon that has come to the attention of researchers in recent years. Literature shows that some individuals can become dependent upon the Internet and that this can interfere with professional, social, and personal functioning, as well as negatively impact well-being, much like other types of addiction (Caplan, 2002, 2003; Davis, 2001; Young, 1996a). Most of the PIU literature has focused on Internet use in general without examining specific applications, though exceptions include research on online gambling (Griffiths, 2003) and online gaming addictions (Wan & Chiou, 2006). No research has examined the addictive potential that social networking sites may hold. Social networking sites may be particularly seductive due to the communicative and interactive features they offer in a less-threatening social environment. Studies of problematic general Internet use have shown that individuals with Internet dependency utilize the communication or interactive functions of the

Internet significantly more than non-communicative functions (Morahan-Martin and Schumacher, 2000; Young, 1996a). Therefore, the first aim of our study was to assess the prevalence of the problematic usage of social networking sites in college students, a uniquely vulnerable population to PIU (Kandell, 1998).

A second aim of our study was to investigate some possible predictors of problematic social networking site use. Studies of problematic use of the Internet in general have shown that socially anxious individuals may be at greater risk for developing PIU than non-socially anxious individuals due to the unique and less-threatening environment that the Internet provides for social interaction (Caplan, 2007; Yen, Ko, Yen, Wu, and Yang, 2007). Given that social networking sites are a key source of social interaction on the Internet, it was proposed in our study that socially anxious individuals may be particularly prone to problematic or dependent usage of these types of sites. In addition to social anxiety, another predictor was also considered that may mediate the relationship between social anxiety and problematic social networking site use. It is thought that individuals with higher levels of social anxiety may lack a sense of belonging to an offline social network due to the anxiety associated with forming face-to-face friendships. Socially anxious individuals may then turn to social networking sites to compensate for the lack of social support in their lives, and become dependent on the ability of social networking sites to fulfill this need. Therefore, our study examined a model in which social anxiety leads to problematic social networking site use partially through a decreased sense of belonging to an offline social network.

Finally, the third aim of our study was to examine how problematic usage of social networking sites relates to levels of well-being in college students. Research has shown a significant relationship between problematic use of the Internet in general and lower levels of

well-being, including increased levels of depression and loneliness, and decreased self-esteem (Caplan, 2002; Morahan-Martin & Schumacher, 2003; Young & Rogers, 1998). Our study sought to replicate this finding with problematic usage of social networking sites.

CHAPTER 2
LITERATURE REVIEW

Social networking sites became a recognized phenomenon on the Internet with the development of Friendster in 2002. Since this time, a number of other social networking sites, such as MySpace and Facebook, have been created and are used by millions of people all over the world. Boyd and Ellison (2007) define social networking sites as "web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system." The authors highlight that the purpose of these sites is primarily to communicate with and make visible to others a person's social network. Though meeting "strangers" outside of one's existing network is possible on these sites, the primary way in which these sites are utilized by site members is to maintain current relationships with friends and family. These sites are differentiated from other Internet sites like message boards and online communities in that the sites are primarily organized around people (the user and the user's social network), rather than around a common interest or goal (Boyd & Ellison, 2007). Social networking sites are more egocentrically structured in that the user is the center of his or her own community, as opposed to public forums or message boards which are topically structured.

These websites take the communicative functions encouraged by older technology like e-mail and AOL instant messenger to another level. Profile pages give users a place to express their individual personalities, and they can share with the world intimate details of their lives. Even photographs of the user and the user's friends can be uploaded to profile pages. One of the most important purposes of profile pages, however, is to provide a place for users to display friend lists and messages from friends. Other users can view friend profiles and expand their own

network through communication with "friends of friends." Users can send others friend requests in order to add other users to their own friend list. Friend lists can grow to be quite large, with many users maintaining lists of friends in triple digits, while others preferring to keep their friend lists limited to only close, existing friendships. In general, however, most friend lists are composed of users who have some shared connection, such as a shared class year at a school (Ellison, Steinfeld, & Lampe, 2007). In recent years, privacy concerns relating to social networking sites have become an issue covered by the media (George, 2006). To protect the privacy of the user and the user's friends, most sites provide privacy features that allow for users to specify who can view their profile and their list of friends.

History of Social Networking Sites

Though Friendster is often given credit as the site that began the online social networking phenomenon, it was not the first social networking site created. The first of these sites, called SixDegrees.com, was launched in 1997 (Boyd & Ellison, 2007). Using Six Degrees, site members could develop personal profiles and friend lists, as well as explore others' friend lists. By 2000, however, the site shut down due to insufficient members and was declared by the site founder to be "ahead of its time." The site failed because people simply did not have enough friends online to promote extensive use of the website. Other social networking sites sprung up during the late 1990s, including AsianAvenue, BlackPlanet, MiGente, and LiveJournal, but none enjoyed enough popularity to make much of an impact culturally. That changed with the creation of Friendster in 2002 (Boyd & Ellison, 2007). Originally designed as a competitor to Match.com, it grew into a massive social networking site where members could network within their current social circle as well as meet "friends of friends." The site became hugely popular and was recognized by the media in the beginning of 2003. A large membership surge as a result of the media coverage overwhelmed the site and ultimately, the site's popularity declined. Despite the

failure of Friendster, it began a new cultural phenomenon that would forever change the way millions of people use the Internet and how a generation of adolescents communicate with one another. From the start of the media recognition in 2003, many new social networking sites were created, the most successful of which are MySpace and Facebook.

MySpace

MySpace is a popular social networking site which was developed in August of 2003 (www.myspace.com). It is currently the world's sixth most popular website and has become a fixture in popular culture. Until recently, MySpace was the most popular of the social networking sites, receiving 80% of the visits to online social networking websites. As of January 2008, the site counted 110 million people as monthly active users, with new registrations occurring at a rate of 300,000 people per day (Owyang, 2008). MySpace began in the United States but has become an international phenomenon with the creation of versions for China and the United Kingdom. The premise of MySpace is to bring friends together and to provide a place for networking and making new online friends. Users post profiles about themselves to create their own page that other users can visit. Pictures, favorite music, and even videos can be uploaded in order to personalize profile pages. Each user maintains a friend list, and friends leave messages for each other that everyone can read. If a user wants to become friends with another user, it is as simple as sending an online friend request.

Facebook

Facebook is another social networking site that has seen a surge in popularity in the past year. As of April 2008, Facebook surpassed MySpace to become the most-trafficked social media website in the world and the fourth most popular website in general (www.facebook.com). As of July 2008, the site has over 80 million active members worldwide and is growing at a rate of 250,000 new registrants a day. Founded in February 2004, Facebook was developed by a

Harvard University student who intended it as a way to get to know other students on the Harvard campus. The site is based upon the paper "facebooks" given to incoming Freshman students at many universities to help students learn more about one another. Due to the extreme popularity of the site at Harvard, the creator expanded Facebook to include other universities. As the demand for the site grew, expansion to high schools and large companies also took place. The site now has over 55,000 regional, work-related, collegiate, and high school networks. Facebook use on college campuses is quite popular. Ellison, Steinfield, and Lampe (2007) found that 94% of the 286 undergraduates sampled in their study were Facebook users. Like MySpace, users of Facebook can post messages on each other's profile pages and private dialogs can occur via email-like messages to another user's inbox. In addition, Facebook members can join virtual groups based on common interests. Users can also search Facebook for other users that have something in common with them, like a hometown, college, or high school.

Though social networking sites like MySpace and Facebook have gained widespread use in recent years, little research has been conducted regarding the use of these sites. Our study was interested in the excessive or problematic use of these sites, including the prevalence, predictors, and impact of problematic usage of social networking sites for college students. Given the non-existent research on this topic, the literature on problematic general Internet use or Internet addiction was examined as a basis for our study.

Problematic Internet Use or Internet Addiction

In recent years, literature has begun to accumulate about the existence of Internet addiction or problematic Internet use (PIU). Countries like South Korea and China are at the forefront of the research in this area, as Internet addiction has become a serious issue in these countries (Block, 2008). The South Korean government considers 2.1% of its population ages 6-19 (approximately 210,000 children) to be Internet addicts and a large portion of this population

requires treatment, including psychotropic medications and/or hospitalization (Choi, 2007). Internet addiction is now considered one of the most severe public health issues in South Korea. The situation in China is not much different, with one report stating that 13.7% of Chinese adolescents (approximately 10 million) are considered Internet addicts (Block, 2008). In the United States, however, Internet addiction is only slowly coming to the attention of researchers. Part of the difficulty in identifying the presence of Internet addiction in this country is due to a lack of an agreed upon definition, the proper terminology to be used, and the etiology of Internet addiction. Internet-related problems have been termed Internet addiction (Young, 1996a), pathological Internet use (Davis, 2001), Internet dependency (Scherer, 1997), and problematic Internet use (Caplan, 2007; Yellowlees & Marks, 2007). The term utilized is dependent upon how one defines the Internet-related problems. Griffiths (1998) believed in the term *Internet addiction,* as he saw Internet use which interferes with an individual's functioning as a type of technological addiction. He points out that Internet addiction does not necessarily mean elevated levels of Internet use, but that some elevated use does turn into an addiction. Kandell (1998) also defines Internet addiction, which he states broadly as "a psychological dependence on the Internet, regardless of the type of activity once logged on" (p. 12).

Other researchers propose more detailed definitions of Internet addiction, some developing assessment instruments based on these definitions. Young (1996a, 1998, 1999) was one of the first to examine Internet addiction and has become a major figure in this area, even developing a website (www.netaddiction.com) for the Center for Internet Addiction Recovery. To define Internet addiction, Young modified the DSM-IV criteria for pathological gambling to develop a set of criteria which comprises an eight-item *Internet Addiction Diagnostic Questionnaire* (DQ). Examples of items include, "Do you feel preoccupied with the Internet (think about previous on-

line activity or anticipate next on-line session)?", "Do you feel the need to use the Internet with increasing amounts of time in order to achieve satisfaction?", "Have you repeatedly made unsuccessful efforts to control, cut back, or stop Internet use?", "Do you feel restless, moody, depressed, or irritable when attempting to cut down or stop Internet use?", and "Have you jeopardized or risked the loss of a significant relationship, job, educational or career opportunity because of the Internet?" To be considered an "Internet addict" a person must meet at least five of the diagnostic criteria in the questionnaire. In order to examine the prevalence of Internet addiction in the general population, Young (1996a) administered the Internet Addiction DQ to 596 participants recruited through advertisements, including postings on electronic support groups geared towards Internet addiction and as a search result for those who searched for the keywords "Internet addiction" on web search engines. The study found that 80% of the participants could be classified as Internet dependents, calling into question the sensitivity of the measure and the sampling methods utilized.

Beard and Wolf (2001) modified Young's (1996a) criteria due to what they believed was a lack of clarity and an improper comparison to a DSM-IV disorder. Instead of pathological gambling, the authors believed that the DSM-IV substance abuse criteria were more appropriate for developing the diagnostic criteria of Internet addiction. Unlike Young, the authors were specific about which five criteria must be met in order to give a diagnosis of Internet addiction. These include: (1) a preoccupation with the Internet, (2) a need to use the Internet with increasing amounts of time in order to achieve satisfaction, (3) unsuccessful efforts have been made to control, cut back, or stop Internet use, (4) when attempting to cut down or stop Internet use, the person is restless, moody, depressed, or irritable and (5) the person has stayed online longer than originally intended. In addition, the authors believe that at least one of the following

criteria must also be met in order to make a diagnosis: the person (1) has jeopardized or risked the loss of a significant relationship, job, educational or career opportunity because of the Internet, (2) has lied to family members, a therapist, or others to conceal the extent of involvement with the Internet, and (3) uses the Internet as a way of escaping from problems or for relieving a dysphoric mood (e.g., feelings of helplessness, guilt, anxiety, depression). The diagnostic criteria set forth by Beard and Wolf were not intended by the authors to be used in a self-report format, but rather as a diagnostic interview by a professional.

Griffiths (1998) also defined Internet addiction based on the DSM-IV criteria for substance abuse. His criteria include symptoms of tolerance, withdrawal, craving, and negative life consequences, as well as additional symptoms of salience of the activity to the individual, changes in mood when engaging in the activity, and a tendency to relapse after the activity is discontinued. Brenner (1997) additionally modified DSM-IV criteria for substance abuse as a basis for his 32-item true-false *Internet-Related Addictive Behavior Inventory* (IRABI). The measure includes questions related to negative life consequences and side effects of Internet addiction such as online relationship problems and resultant time management issues. Culture-specific measures of Internet addiction have also been developed, mainly for use in China and Taiwan. These include the *Chinese Internet Addiction Scale* (CIAS; Chen and Chou, 1999), the Chinese-translated *IRABI* (Chou & Hsiao, 2000), and the *Internet Addiction Scale for Taiwan High School Students* (IAST; Lin & Tsai, 1999).

Though many researchers define problems with Internet use as an addiction, other researchers do not believe that the term “addiction” should be associated with Internet use, as this term is reserved for physiological dependence between a person and a stimulus, such as a substance. Davis (2001) suggests the term *pathological Internet use* (PIU) be used instead, and

that *dependence* be discussed in relation to the Internet rather than *addiction*. He defines PIU as consisting of two types: specific pathological Internet use and generalized pathological Internet use. Specific PIU refers to a content-specific dependency, such as a dependency on online gaming or online gambling. It is assumed that some form of this dependence would still exist even in the absence of the Internet (e.g., gambling addiction at casinos instead of online gambling). Generalized PIU, on the other hand, refers to misuse of the Internet independent of specific Internet content. It usually involves a dependency on the unique social environment that the Internet can provide, and therefore the dependence in an alternative form would not necessarily exist in the absence of the Internet, as it would with specific PIU. Generalized PIU is characterized by a general sense of "wasting time" online without a clear purpose, or using the Internet for social functions in order to remain in a virtual social life. Symptoms of PIU include: obsessive thoughts about the Internet, diminished impulse control, inability to decrease Internet use, anticipating future online use, less time spent on other pleasurable offline activities, social isolation, sense of guilt about online use, and a feeling that the Internet is an individual's only friend.

Caplan (2002) agreed with Davis (2001) that the term *addiction* should not be associated with the Internet. He suggested the term *problematic Internet use* (PIU) to describe the maladaptive cognitions and behaviors associated with Internet use that result in a negative impact on academic, professional, and social functioning. Following Davis's work, Caplan characterized PIU as including cognitive and behavioral symptoms such as mood alteration, perception of social benefits of the Internet, compulsive use, excessive use, withdrawal, and perceived social control when interacting with others online compared to face-to-face. Based on his own definition and on Davis's model, Caplan developed a measure, the *General Problematic*

Internet Use Scale (GPIUS), to assess PIU. This measure will be discussed in more detail in the materials section of this paper as it was modified and utilized in our study. Accordingly, Caplan's term – problematic internet use (PIU) – will be used for the remainder of this paper to refer to the phenomenon of "Internet addiction," or the maladaptive cognitions and behaviors related to Internet use which may interfere with normal daily living (Caplan, 2002). The term *problematic social networking site use* will be utilized to refer to a specific problematic or dependent relationship that a person may develop with these types of sites.

In addition to a lack of clarity as to how to characterize PIU, a debate also exists among researchers as to how to classify PIU within the existing range of mental disorders. Along with this, many are considering whether "Internet Addiction" should be added to the next revision of the Diagnostic and Statistical Manual of Mental Disorders (DSM; APA, 1995). Yellowlees and Marks (2007), the most recent authors to weigh in on the debate, divide the writing on this topic into two schools of thought. On one side are the researchers who propose that individuals are addicted to the use of the Internet in general and Internet addiction should be classified as an emerging psychiatric disorder in the next revision of the DSM. For example, Marks (1990) advocates the addition of Internet addiction to the list of other non-chemical behavioral addictions (e.g., pathological gambling) included in the DSM. On the other side of the debate are those researchers who believe that individuals can develop a problematic relationship with specific online applications available via the Internet, such as online gambling, shopping, chatting, or pornography. Researchers in this camp do not believe that PIU warrants a special diagnosis (e.g., Internet addiction) because addictions to online content can be classified under pre-existing DSM classifications, such as pathological gambling or impulse control disorder not otherwise specified (NOS) (Beard & Wolf, 2001; Shapira, Goldsmith, Keck, Khosla, &

McElroy, 2000; Treuer, Fabian, & Furedi, 2001). Mitchell (2000) believes that a separate diagnosis is not warranted because a problematic relationship with the Internet could be the result of an underlying, co-morbid psychological disorder. Griffiths (2000) seconds this by his assertion that "Internet addicts" do not exist, but that the Internet can provide individuals with a way to engage in other addictions. In other words, addictions *to* the Internet (i.e., addictions to the Internet itself) and addictions *on* the Internet (i.e., the Internet provides another forum for an individual to engage in his or her addiction, such as online gambling or gaming) have different meanings and implications. Yellowees and Marks review the research provided by both schools of thought and conclude that though researchers in both camps do not deny that individuals can develop a problematic relationship with the Internet, Internet addiction does not warrant a special diagnosis as an emerging disorder. This certainly is not the end of this debate and our study did not attempt to settle the argument. Rather, the purpose of our study was to simply determine if a dependency on a specific Internet application, social networking sites, can exist.

First aim: Existence of Problematic Social Networking Site Use

Most research has examined dependency on the Internet in general without addressing a possible dependency on specific Internet applications. Our study adds to the literature in this area by exploring the possible existence of a dependency specifically on social networking sites. As previously defined, social networking sites are considered websites on the Internet organized around people (the user and the user's network) which "allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connections, and (3) view and traverse their list of connections and those made by others within the system" (Boyd & Ellison, 2007). Some research provides justification for believing that a dependency on these types of sites may exist. When researchers of PIU or Internet addiction ask study participants what Internet applications they typically use, a

significantly higher number of PIU users note that they use the communicative functions of the Internet over non-communicative functions. Young (1996a) found that the majority of Internet users classified as "dependent" by her *Internet Addiction DQ* use online interactive applications. Chou and colleagues (Chou, Chou, & Tyan, 1999; Chou & Hsiao, 2000) also found that "addicted" individuals were more likely to use the Internet for communication functions rather than for other non-communication uses. Morahan-Martin and Schumacher (2000) reported that "pathological Internet users" in their study utilize the Internet more for meeting new people, emotional support, and interactive applications than non-pathological users. These findings seem to support the idea that communicative or interactive applications of the Internet might be particularly addictive. It has already been shown that a large majority of Internet users are utilizing communicative applications like social networking sites, given that sites like MySpace and Facebook are within the top most visited sites in the world. To emphasize, they are some of the most visited out of all websites, not just social networking sites (Owyang, 2008). This fact combined with research supporting the addictive nature of Internet communication applications suggest that a dependency on social networking sites may exist for some people. Therefore, our study sought to explore the existence and prevalence of problematic social networking site use. This was examined in a population of college students because this group has been shown to be frequent users of social networking sites (Ellison et al., 2007) and vulnerable to PIU (Kandell, 1998, Moore, 1995).

College students may be particularly at risk for developing a problematic relationship with the Internet. Kandell (1998) believes that college students' developmental stage of solidifying their sense of identity and forming meaningful and intimate relationships puts them at risk for making the Internet and its social functions an overly central part of their lives. Moore (1995)

also cited accessibility of the Internet and flexibility of schedules as two factors that may contribute to increased vulnerability for college students to develop PIU. In addition, most college students are part of the Net Generation, another group which has been identified as a vulnerable population to PIU. The Net-geners or Millennials, as they are sometimes called, are individuals born in the early 1980's or later that are the first generation to grow up with personal computers and the Internet. BusinessWeek (Hempel, 2005) referred to this generation as the "MySpace Generation" due to the high use of the website among this cohort. Howe & Strauss (2000) report that Millennials have higher socio-economic status, more education, and are more ethnically diverse than any other generation before them. Making up over 30% of the United States population, this generation is one of the largest, and therefore problems to which this group may be particularly vulnerable should be of interest to researchers.

Some have proposed that characteristics which define this generation could contribute to a particularly high vulnerability for PIU. Citing Tapscott's (1998) book about the rise of the Net Generation, Leung (2004) identified the following cohort characteristics that might make this generation vulnerable to PIU. These include: (1) a global orientation, (2) being emotionally uninhibited, (3) having a strong belief in the right to information and learning, (4) being technologically savvy, and (5) having a preoccupation with maturity and adulthood. For Net-geners with these characteristics, the Internet's social communication applications may be particularly seductive. Therefore, using college students of this generation to study the possibility of a dependency on social networking sites is especially appropriate.

Second Aim: Predictors of Problematic Social Networking Site Use

After establishing the existence of problematic social networking site use, the second aim of our study was to examine possible predictors of problematic usage. Though many possible predictors exist, our study examined two: social anxiety and the degree to which a person

belongs to an offline social network. The selection of these predictors was based on the proposed etiology of problematic general Internet use reflected in the literature as well as research suggesting an association between these predictors and general PIU.

Etiology of Problematic Internet Use

Etiologies of PIU have been suggested by a number of different authors. For example, Chou and colleagues (1999) applied Stephenson's (1998) *Play Theory of Mass Communication* to explain their version of the etiology of PIU. When applied to Internet use, this theory proposes that the Internet provides a pleasurable and reinforcing communication experience and that this reinforcement entices the individual to continuously use the Internet to the point that overuse leads to addiction-like behavior. Another explanation proposed by Suler (1999) states that an individual becomes dependent on the Internet due to the Internet's ability to satisfy one or more unfulfilled needs of the individual. Suler identified six needs that the Internet could be used to fulfill, including (1) sex, (2) an altered state of consciousness, (3) achievement and mastery, (4) belonging, (5) relationships, and (6) self-actualization/transcendence of self.

The most detailed explanation of PIU development is given by Davis (2001). He proposed a cognitive-behavioral model of PIU in which maladaptive cognitions, together with behaviors that intensify problematic responses, result in PIU. In Davis's model, it is the cognitive symptoms that lead to the behavioral symptoms which are most commonly emphasized in other models. The conditions under which PIU occurs are considered within a diathesis-stress model, in which a vulnerability or psychopathology exists which predisposes a person to PIU development should a stressor occur. In Davis's model, the stressor which may encourage the PIU to develop is the introduction of the Internet or a new technology on the Internet (e.g., social networking sites). By itself, the introduction of this new technology does not cause PIU, but it is a necessary condition for PIU to occur. Reinforcement of the use of Internet technology is a key

factor which allows PIU to develop. For example, Davis believed that socially isolated individuals may find the social environment offered by the Internet particularly reinforcing because social applications on the Internet allow for a non-threatening environment for communication. If an individual is reinforced for using the online activity by receiving some kind of positive response, the individual will continue Internet use, and may be conditioned to use the online activity more and more to receive the desired response.

Davis contends that maladaptive cognitions are the most important factor in PIU development and maintenance. He divides these maladaptive cognitions into two subtypes – thoughts about self and thoughts about the world. Thoughts about self usually occur in a ruminative-type cognitive style, in which the individual frequently thinks about his or her problematic relationship with the Internet (e.g., trying to figure out why overuse is occurring, reading about Internet overuse, constantly talking to friends about Internet overuse). The rumination of thoughts interferes with the person's ability to problem solve and engage in new behaviors. Hence, the PIU is exacerbated by maladaptive cognitions. Cognitions about self that maintain PIU also include self-doubt, low self-efficacy, and negative self-appraisal (e.g., "I am worthless offline, but online I am somebody," "I am a failure when I am offline"). The individual with these types of cognitions may use the Internet to achieve a more positive view of self through social acceptance in a less-threatening environment. The Internet is considered less socially threatening than face-to-face social interactions because it allows for a higher degree of self-disclosure and risk-taking due to reduced auditory and visual cues, allowance of time to think about responses, and anonymity (Morahan-Martin & Schumacher, 2000; Peter, Valkenburg, & Schouten, 2005).

Thoughts about the world are the other maladaptive cognitive subtype proposed by Davis (2001). These involve the generalization of specific events to global patterns or engagement in all-or-nothing type thinking (e.g., "Nobody loves me offline," "The Internet is the only place I am respected"). Both maladaptive thoughts about self and thoughts about the world are automatically triggered by stimuli associated with the Internet, and are automatically enacted when one engages in online activities. These maladaptive cognitions therefore lead to PIU and the maintenance of problematic use.

Predictors of Problematic Social Networking Site Use

The predictors of problematic social networking site use included in our study (i.e., social anxiety and a lack of belonging to a local social network) fit with these given etiologies of problematic general Internet use. Caplan (2007) speaks directly to the fit of social anxiety within Davis's (2001) model of PIU development. He suggests that socially anxious individuals have more maladaptive cognitions about their social competence than others without these issues. Citing the self-presentational theory of social anxiety (Schlenker & Leary, 1982), Caplan explains that social anxiety is created due to a desire to create a positive impression in a social situation, but a lack of confidence in one's social and self-presentation skills creates anxiety in social encounters. To reduce the anxiety, socially anxious individuals will turn to low-risk communicative environments in which they have more of a chance of presenting themselves in a positive way.

To relate this to Davis's model of PIU development, social anxiety would be considered the underlying vulnerability or existing psychopathology that predisposes the person to PIU development. When online communication, such as a social networking site, is introduced, a socially non-threatening environment is created. For socially anxious individuals, their maladaptive cognitions about their social skills, along with a desire to make social connections in

a less risky way, may lead to a preference for this online social environment instead of face-to-face communications. PIU development could then occur as the individual continues to receive reinforcement, or the gaining of social acceptance and support, by using this less-threatening online environment. The cognitions and behaviors that drove the socially anxious person to prefer the online environment also act to maintain online use and the problematic or dependent relationship the person has formed with the online social atmosphere.

Caplan examined his model of social anxiety as a contributor to PIU development by collecting data from 343 undergraduate students. He found significance for a model that indicated social anxiety as the most important predictor of preference for online communication and negative outcomes associated with PIU. Further evidence in support of the relationship between social anxiety and PIU has also been found. Yen and colleagues (Yen, Ko, Yen, Wu, & Yang, 2007) showed that individuals classified as Internet addicts by the Chen Internet Addiction Scale (CIAS; Ko, Yen, Chen, Chen, & Yen, 2005) had higher levels of social phobia, as indicated by the Social Phobia Inventory (SPIN; Connor et al., 2000) than those not classified as addicts.

Given that social networking sites provide a type of online social atmosphere, it is thought that these sites too can provide a less-threatening environment in which social support may be gained. Socially anxious individuals may be drawn to these types of sites and then may develop a problematic relationship with them through the model outlined by Davis (2001) and Caplan (2007). Therefore, our study proposed that social anxiety is a predictor of problematic social networking site use.

Within this prediction is the assumption that socially anxious individuals turn to these sites to fulfill a need for social relationships due to a lack of currently belonging to an offline social

network. To feel belongingness is a basic need of most human beings. Maslow (1968) ranked it in the middle of his motivational hierarchy, and Bowlby (1969) made it an integral part of his attachment theory. The belongingness hypothesis proposes that humans have an inherent need to form and maintain lasting, positive, and significant relationships with others (Baumeister & Leary, 1995). Anant (1966) defined belonging as "a sense of personal involvement in a social system so that persons feel themselves to be an indispensable and integral part of the system" (p. 21). Hagerty and colleagues differentiate two types of belonging – psychological and sociological (Hagerty, Lynch-Sauer, Patusky, Bouwsema, & Collier, 1992). Psychological belonging refers to the affective state, or a person's perception of fit and valued involvement in a system. Sociological belonging refers less to the affective state and more to actual membership in a group or system. This type of belonging is more observable than psychological belonging as it can be behaviorally detected via group membership. In our study, the measure used to assess belonging is a measure of sociological belonging, or actual membership in an offline social network. Literature has shown that socially anxious individuals often avoid forming face-to-face relationships (Gambrill, 1996), and have fewer friends (La Greca & Lopez, 1998). For socially anxious people who may avoid face-to-face relationships and therefore lack belonging to an offline social network, online social networking sites may provide a less-threatening way to fulfill this need to belong. However, if the need for belonging is only being met through the use of these online sites, individuals may become dependent on these sites to fulfill this need.

The idea of socially anxious individuals turning to the Internet for need fulfillment is supported by McKenna and Bargh (2000), who proposed a social compensation hypothesis. This theory suggests that socially anxious individuals may compensate for their lack of social support by using the non-threatening environment of the Internet to meet friends. Valkenburg and Peter

(2007) found support for the social compensation hypothesis by showing that socially anxious individuals used the Internet for online social interactions more than their non-socially anxious counterparts, and perceived the Internet as a safer place for intimate self-disclosure. Chak and Leung (2004) also suggest that the Internet can provide a place for individuals to satisfy social and emotional needs that are unfulfilled by their limited face-to-face social networks. If the person finds the use of social networking sites fulfilling and reinforcing enough, problematic usage with social networking sites may develop through cognitive and behavioral mechanisms associated with this reinforcement, as outlined by Davis (2001). This idea is also suggested by Suler (1999), who proposed that PIU develops when an unmet need is fulfilled and reinforced through Internet use. He specifically noted one such need as the need to belong. In addition, Griffiths (2000) has shown a relationship between using the Internet for a way to compensate for a lack of social support and "Internet addiction."

In conclusion, our study examined both the degree to which a person belongs to a social network and social anxiety as possible contributors to problematic social networking site use. PIU etiologies and research indicating an association between social anxiety and a lack of belonging suggest that a lack of belonging may mediate the relationship between social anxiety and problematic social networking site use. Individuals who are socially anxious may have less of a local social network, and therefore may turn to social networking sites to compensate for an unfulfilled need to belong. Problematic usage may develop as a result of the reinforcing fulfillment of this need provided by social networking sites.

Third Aim: Problematic Social Networking Site Use and Well-Being

Finally, because various studies have shown a relationship between PIU and decreased well-being, the third aim of our study was to examine if this same relationship exists between problematic usage of social networking sites and college students' well-being. Research

specifically looking at problematic social networking site use and its association with well-being does not exist. Therefore, the literature showing a relationship between well-being and PIU in general was reviewed as support of our study's predictions.

A number of studies have found an association between PIU and a range of variables representing well-being, including levels of depression, loneliness, and self esteem. Yen and colleagues (2007) examined the relationship of PIU with other psychological disorders, including depression. PIU was measured using the Chen Internet Addiction Scale (CIAS; Ko et al., 2005). Depression was assessed using Center for Epidemiological Studies' Depression Scale (CES-D; Radloff, 1977). These measures were administered to 2,114 high school students in Taiwan. Close to 18% of the students were classified as "Internet addicts" according to the CIAS. Results of the study indicated that "Internet addicts" had significantly higher CES-D scores than non-addicts, indicating that higher levels of depression were associated with PIU. Young and Rogers (1998) also found a relationship between PIU and depression. They administered the Internet Addiction DQ (Young, 1996a) and the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) to 312 adults recruited through advertisements on the Internet. They found that those individuals classified as Internet addicts had higher levels of depression than non-addicts. Finally, Caplan (2002) additionally found an association between PIU and depression. His Generalized Problematic Internet Use Scale (GPIUS) was used as a measure of PIU and the BDI-II as a measure of depression. After administering the measures to 386 undergraduates, he found GPIUS scores to be positively correlated with depression scores, indicating that as PIU increases so do symptoms of depression.

Loneliness has also been found to relate to PIU. Kraut and colleagues (Kraut, Patterson, Lundmark, Kiesler, Mukopadhyay, & Scherlis, 1998) found that levels of loneliness increased

with the amount of time spent online. Caplan (2003) also found loneliness, as measured by the UCLA Loneliness Scale (Russell, Peplau, & Cutrona, 1980), to be positively associated with PIU, as measured by the GPIUS. Two additional studies found a similar result, with pathological Internet users or Internet dependents scoring higher on the UCLA Loneliness scale than non-pathological users or non-dependents (Morahan-Martin & Schumacher, 2000; Nalwa & Anand, 2003), lending further support for a relationship between loneliness and PIU.

Finally, a negative relationship between PIU and self-esteem has also been found in the literature. Caplan (2002) examined the relationship between PIU, as measured by the GPIUS, and self-esteem, as measured by the Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965). He found GPIUS scores to have a significant negative relationship with RSE scores, indicating that individuals with higher levels of PIU have lower levels of self-esteem. Niemz, Griffiths, and Banyard (2005) also found a significant relationship between PIU and low self-esteem. PIU was measured using the Pathological Internet Use Scale (Morahan-Martin & Schumacher, 2000) and self-esteem was assessed with the RSE. Three-hundred seventy one undergraduate students completed the measures. PIU scores were found to be negatively correlated with RSE scores, indicating that PIU is associated with lower self-esteem. Armstrong, Phillips, and Saling (2000) found similar results. Self-esteem scores, as measured by the Coopersmith Self-Esteem Inventory (SEI; Coopersmith, 1991), predicted PIU, as measured by the Internet-Related Addictive Behavior Inventory (IRABI; Brenner, 1997). Specifically, lower self-esteem scores predicted greater PIU.

The limitation in many of these studies is the failure to establish causality in the relationship that has been found between PIU and well-being. It could be that this relationship exists because those suffering from decreased well-being such as low self-esteem, loneliness,

and/or depression are more likely to develop PIU. As Davis's (2001) model of PIU development explains, a pre-existing psychopathology or condition could make a person more vulnerable to PIU development should a stressor occur. However, this relationship could also exist because PIU negatively impacts an individual's well-being. Davis's (2001) model provides support for this idea by suggesting that the maladaptive cognitions which are associated with PIU can have detrimental effects on self-esteem and life satisfaction. In addition, PIU has been shown to interfere with normal daily functioning in a number of studies. Scherer (1997) found that 13% of participants admitted that Internet use had interfered with their academics, work performance, or social lives and 2% of respondents viewed the Internet as having an overall negative effect on their daily lives. Internet dependents in Young's (1998) study also reported personal, family, and work problems in relation to PIU. This interference in life functioning caused by PIU could negatively impact a person's sense of well-being and satisfaction with life.

Given that theories of PIU development and maintenance find support for both directions in the causal relationship between PIU and well-being, it is most likely that the causal relationship goes both ways (Chou, Condron, & Belland, 2005; Morahan-Martin & Schumacher, 2003). As explained by Caplan (2003) and Davis (2001), lower well-being may make one susceptible to PIU development, but the maladaptive cognitions and behaviors that maintain PIU may worsen these conditions. As well, the interference that PIU can have with daily functioning in many areas of life, such as academic, work, and family functioning, may have a negative impact on a person's well-being.

Though research showing a relationship between general PIU and well-being was used to support the purpose of our study, our study did not attempt to find evidence for a causal relationship between these constructs. Rather, our study aimed to establish the existence of a

relationship between problematic social networking site use and well-being given that this area has not been researched previously.

Study Overview

In summary, the main objective of our study was to explore a novel area in the Internet addiction literature – the problematic use of social networking sites like MySpace and Facebook among college students. The first aim of our study was to establish the existence of problematic social networking site use by surveying a college undergraduate population. The second aim of our study was to explore some possible predictors of problematic usage of social networking sites, including social anxiety and the degree to which a person belongs to an offline social network. Finally, our study aimed to explore the association of problematic social networking site use with well-being for college students. Given these study objectives, the following predictions were set forth:

(1) Problematic social networking site use does exist and the measure used to assess it will show a range of scores, including scores indicating a high presence of symptoms of problematic use. This prediction is supported by research indicating that problematic general Internet users utilize the communicative functions of the Internet more than non-communicative functions (Chou et al., 1999; Chou & Hsiao, 2000; Young, 1996a). Given that social networking sites are the most popular social application on the Internet, it is predicted that for some, a dependency on social networking sites, rather than the Internet in general, may exist.

(2) The degree to which a person belongs to an offline social network will mediate the relationship between social anxiety and problematic social networking site use. In order to find evidence for this, the following sub-predictions must be met:

   a. The degree of social anxiety will be positively related to problematic use of social networking sites. Higher levels of social anxiety will be predictive of higher levels of problematic social networking site use. This is based on the literature indicating social anxiety as a predictor of PIU development (Caplan, 2007; Yen et al., 2007).

   b. The degree to which a person belongs to an offline social network will be negatively related to problematic use of social networking sites. Less belonging will be predictive of higher problematic social networking site use. This is based on the social compensation hypothesis (McKenna & Bargh, 2000) that individuals with a

limited social network may turn to the Internet to compensate for this, and that this need fulfillment may result in PIU (Griffiths, 2000; Suler, 1999).

c. The degree of social anxiety will be negatively related to the degree to which a person belongs to an offline social network. More socially anxious people will have a decreased sense of belonging to an offline social network. This is based on the literature indicating that socially anxious individuals often avoid forming face-to-face relationships (Gambrill, 1996) and have fewer friends (La Greca & Lopez, 1998).

d. By including the variable of belonging to an offline social network, the relationship between social anxiety and problematic social networking site use will be significantly decreased, indicating that the degree to which a person belongs to an offline social network mediates the relationship between these two variables.

(3) Problematic use of social networking sites is expected to be related to decreased well-being, based on the literature linking general PIU to decreased well-being (Caplan, 2002; Morahan-Martin & Schumacher, 2003; Young & Rogers, 1998). Specifically, a significant negative relationship is expected between problematic use of social networking sites and the well-being indicators of self-esteem, satisfaction with life, and happiness, and a significant positive relationship is expected between the problematic social networking site use and the well-being indicators of depression and loneliness.

CHAPTER 3
MATERIALS AND METHODS

Participants

Undergraduate students attending the University of Florida were recruited for participation in our study due to this type of population's unique vulnerability to PIU that is noted in the literature (Kandell, 1998; Leung, 2004; Moore, 1995), as well as the ease of recruiting this population. Three hundred sixty-seven students completed the online survey. Of these 367 students, approximately 95% (N = 350) were social networking site users. The ethnicity make-up of this sample consisted of approximately 13% African-American (N = 49), 9% Asian/Pacific Islander (N = 34), 13% Hispanic/Latino (N = 47), 60% Caucasian (N = 221), 1% Middle Eastern/Arab (N = 4), and 3% Biracial/Multiracial individuals (N = 12). Eighty-one percent (N = 297) of the participants were female and 19% (N = 70) were male. No significant gender or ethnic differences were found between social networking site users and non-users. The participants ranged in age from 17 to 28, with the average age being 20 years (SD = 1.60). Students classified as Juniors made up the largest portion of the sample (34%, N = 125), followed by Sophomore students at 26% (N = 95), Senior students at 21% (N = 77), and Freshman students at 19% (N = 70). The majority of students live off campus (71%, N = 261). All participants were treated in accordance with the "Ethical Principles of Psychologists and Code of Conduct" (American Psychological Association, 1992).

Measures

Eight measures were used in our study to assess the following: the degree to which a person belongs to a local social network, problematic social networking site use, social anxiety, and the well-being constructs of self-esteem, happiness, satisfaction with life, loneliness, and depression. A short demographic survey was also employed to provide information on the

characteristics of the study participants, including age, academic classification (e.g., Freshman), race/ethnicity, and gender. In addition, questions were included that explored the participants' social networking site use. These questions included an assessment of the type of social networking site(s) most commonly used by the participant (i.e., MySpace, Facebook, Friendster, or Other), the length of time the participant has been a member, for what purpose the participant uses social networking sites, and the average amount of time the participant uses these sites. Amount of site use was assessed with the questions: (a) "How many days per week do you usually visit a social networking site such as MySpace or Facebook?", (b) "On a typical day, how many times do you visit social networking sites, such as MySpace or Facebook?", and (c) "If you visit one or more of these sites, how many minutes do you usually stay on the site each time?" These items are based on the items used by Valkenburg and colleagues (2006) to assess participants' use of the social networking site, CU2. In addition to these questions, two items were given at the end of the survey which asked: (a) "Has anyone ever told you that your use of online social networking sites like MySpace or Facebook is problematic or interferes with your life (daily functioning)?", and (b) "Do you feel that your use of online social networking sites like MySpace or Facebook is problematic or interferes with your life (daily functioning?)"

Belonging to an Offline Social Network

The Interpersonal Support Evaluation List (ISEL; Cohen & Hoberman, 1983) was used to assess the degree to which a person belongs to an offline social network. This is multi-dimensional measure which has two forms – a 40-item version for the general population and a 48-item version for college students. Only one of the subscales is relevant for use in the current study – Belonging. This scale is comprised of 12 items which assess the extent to which an individual feels a part of a social group with common interests or the perceived availability of friends which one can spend time with. In the case of the college version of this measure, it is the

extent to which an individual feels a part of a social group on campus. Refer to appendix A for a full list of items. Respondents are asked to rate each item based on their level of agreement with the statement. Answer choices include: “Mostly False” and “Mostly True.” A score of 0 or a score of 1 is given, depending on whether the statement is worded positively or negatively. Total scores can range from 0 to 12, with higher scores indicating more belongingness to a social network. The measure has been shown to have good internal consistency, with estimates ranging from 0.88 to 0.90 (Cohen & Hoberman, 1983).

Problematic Social Networking Site Use

The Generalized Problematic Internet Use Scale (GPIUS; Caplan, 2002) was modified to examine levels of problematic social networking site use among study participants. This measure is a 29-item self-report questionnaire based on Davis’s (2001) cognitive-behavioral model of PIU. It measures the prevalence of cognitive and behavioral symptoms of PIU derived from this model, as well as the degree to which the problematic use interferes with the individual’s functioning in personal, academic, and professional areas of his or her life. The measure was modified to address PIU specifically with social networking site use, or the degree to which the respondent has a problematic or dependent relationship with their use of social networking sites. This was done by replacing the word “Internet” or “online” with the words “social networking sites.” For example, the item “When not online, I wonder what is happening online” was changed to “When not on a social networking site, I wonder what is happening on that site.” A full list of items is included in Appendix B. Items encompass seven areas which assess (a) mood alteration (i.e., the extent to which the individual uses social networking sites to change affective states), (b) perceived social benefits (i.e., the extent to which an individual perceives social networking sites as providing greater social benefits than face-to-face communication), (c) perceived social control (i.e., the extent to which an individual perceives social control when

using social networking sites for communication), (d) withdrawal (i.e., the degree of difficulty in staying away from using social networking sites), (e) compulsivity (i.e., the inability to control, reduce, or stop social networking site use, along with feelings of guilt about lack of control), (f) excessive social networking site use (i.e., the degree to which an individual feels he or she spends too much time using social networking sites, or more than the planned amount of time), and (g) negative outcomes (i.e., the severity of personal, social, and professional problems as a result of social networking site use). Each item asks respondents to rank their agreement with the statement on a 5-point Likert scale, from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). Scores may range from 29 to 145. The higher the total score, the greater the degree of problematic social networking site use. A specific cut-off score which would indicate problematic use was not designated for this instrument. Caplan did not believe in proposing a cut-off score defining a problematic Internet user versus a non-problematic user, as the theory on which the measure is based (i.e., Davis's (2001) cognitive-behavioral model) stated that the adaptive versus maladaptive nature of Internet use is dependent upon the individual and the effects the use has on the individual's life.

Caplan (2002) developed the GPIUS by utilizing specific examples of PIU cognitions, behaviors, and outcomes proposed by Davis's theory, as well as including items from other measures of PIU in the literature (Armstrong et al., 2000; Morahan-Martin & Schumacher, 2000; Scherer, 1997; Young, 1998). In order to identify the factor structure, Caplan conducted an exploratory factor analysis on data he collected from an administration of the GPIUS to 386 undergraduates, resulting in a final list of items which comprise the seven areas outlined above. The seven areas identified were highly consistent with those cognitions, behaviors, and outcomes proposed by Davis's model of PIU. Reliability analyses indicated high internal consistencies,

with alpha coefficients ranging from 0.78 to 0.85 for the seven subscales. Validity support is indicated by the significant relationship between GPIUS scores and measures of depression, loneliness, and self-esteem (Caplan, 2002, 2003) in a direction consistent with Davis's (2001) model of PIU.

Social Anxiety

The Social Avoidance and Distress scale (SAD; Watson & Friend, 1969) was used in our study to assess an individual's degree of social anxiety. This is a 28-item scale in a true-false format which assesses feelings of distress/discomfort and avoidance of social interactions. Examples of items include, "I am usually at ease when talking to someone of the opposite sex," and "I try to avoid formal social occasions." Refer to Appendix C for a full list of items. This scale was intended as a measure of comfort in face-to-face social interactions, and this was emphasized in our study by instructing respondents to answer the items in reference to their face-to-face social interactions, not online social interactions. Higher scores on this measure indicate higher levels of social anxiety. Internal consistency estimates have ranged from 0.77 to 0.93 (Watson & Friend, 1969; Caplan, 2007).

Well-Being

Multiple measures were used to assess well-being in our study. These included measures of depression, loneliness, self-esteem, happiness, and satisfaction with life.

Depression

The Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) was utilized to assess depression levels for our study's participants. This measure was designed for use with a general, non-clinical population and assesses the current frequency of depressive symptoms for an individual. The 20-item questionnaire emphasizes depressed affect or mood, psychomotor retardation, loss of appetite, sleep disturbance, and feelings of guilt, worthlessness,

helplessness, and hopelessness. For each item, the respondent is asked to indicate how frequently, in the past week, he or she has experienced the symptom expressed by the item. Response choices range from *rarely or never* (less than 1 day), *some or a little of the time* (1 or 2 days), *occasionally* (3 or 4 days), and *most or all of the time* (5 up to 7 days). A score of 0 is given for the first response choice up to a score of 3 for the last response choice. Positive items are reverse scored. Total scores range from 0 to 60, with higher scores indicating the presence of more symptoms of depression. The measure has a well-established reliability (Hann, Winter, & Jacobsen, 1999). An internal consistency of 0.85 has been found for the general population (Radloff, 1997). Validity has been established by finding significant correlations between the CES-D and other measures of depression, including the BDI-II (Shafer, 2006).

Loneliness

The third version of the UCLA Loneliness Scale (Russell, 1996) was used to measure levels of loneliness. The scale contains 20 positively and negatively worded items that assess an individual's experience of loneliness. This revised measure is a simplified adaptation of the older version due to complaints about the readability of some of the items (Russell, 1996). Possible item responses range from 1 (*never*) to 4 (*always*). Scores may range from 0 to 80, with higher scores indicating a higher degree of loneliness. Good reliability with college students has been established (Cronbach's alpha = 0.92) (Russell, 1996). Validity with college students has also been indicated by the significant positive correlations found between the UCLA Loneliness Scale and other measures of loneliness, as well as significant negative correlations with measures of social support in an undergraduate student population (Russell, 1996).

Self-Esteem

The Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965) is a widely used, 10-item self-report measure that was utilized in our study to assess self-esteem. The scale items assess an

individual's perception of general self-worth or positive self-esteem (e.g., "I feel that I'm a person of worth, at least on an equal plane with others"). Each item has a 4-point Likert scale in which the participant is asked to rate his or her agreement, ranging from 0 (*strongly disagree*) to 3 (*strongly agree*). Reverse scored items are also included (e.g., "At times, I think I am no good at all"). A score is calculated by summing the points for each item, with scores ranging from 0 to 30. The higher the score, the higher the self-esteem. Construct and convergent reliability of the measure has been demonstrated (Goldsmith, 1986). Internal consistency estimates have ranged from 0.82 to 0.93 (Goldsmith, 1986). Validity has been established through findings of a correlation between RSE scores and depression (Rice, Ashby, & Slaney, 1998) as well as other constructs (e.g., anxiety) in expected directions (Goldsmith, 1986; Rosenberg, 1965).

Happiness

Personal happiness was assessed using the Oxford Happiness Questionnaire (Hills & Argyle, 2002). This scale contains 29 positively and negatively worded items meant to broadly measure personal happiness. Participants rate on a 6-point Likert scale their degree of agreement with each of the items in the scale. Higher scores indicate higher levels of personal happiness. Sample items include "I feel that life is very rewarding" and "I do not have a particular sense of meaning and purpose in my life." Refer to Appendix D for a full list of items. Studies have shown the scale to be correlated in the expected direction with other measures of subjective well-being. Reliability estimates have averaged around 0.91 (Hills & Argyle, 2002).

Satisfaction with life

The Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Gri□n, 1985) was used to measure overall satisfaction with life. This scale contains 5-items that are used to assess participants' overall judgment about their life satisfaction. Participants rate their agreement with items on a 7-point Likert scale. Scores can range from 5 to 35, with higher scores indicating

greater life satisfaction. A 2-month test-retest correlation coefficient of .82 has been found (Diener et al., 1985). Reliability estimates have ranged from .78 to .95 (Diener et al., 1985; Vassar, 2008). Positive correlations have been found between the SWLS and other measures of subjective well-being, as well as negative correlations with measures of psychopathology (Diener et al., 1985).

Methods

An online survey development program, Survey Monkey (www.surveymonkey.com), was used to develop an online survey for our study. The survey contained the demographic questions, items concerning social networking site use, and the measures of PIU, social anxiety, belonging, and well-being. Studies have shown that converting paper-based instruments to Internet-based measures does not distort the validity, reliability, or factor structure of the instruments (Yu & Yu, 2007). In addition to the measures, an Institutional Review Board (IRB) approved consent form was included in the online survey, and participants could not view the rest of the survey without giving their consent to voluntarily participate.

To recruit participants, a link to the online survey was given to professors and graduate student instructors in the Department of Psychology at the University of Florida. The professors and graduate students were asked to distribute the link to their undergraduate classes through class listserves or in-class announcements. Four graduate students and two professors agreed to allow their students to participate. Participation in the study was on a completely voluntary basis. All instructors used the online survey as an opportunity for extra credit for their students. An alternative extra credit option was also offered to the students so as to not violate ethical recruitment practices.

CHAPTER 4
RESULTS

Social Networking Site Use

In our study, 95% (N = 350) of participants identified themselves as social networking site users. Among these users, a very large majority are members of the social networking site Facebook (97.8%). Members of MySpace made up 56% of the sample and members of Friendster made up less than 2% of the sample. Less than 1% of the sample were members of a social networking site other than the three listed. The site names given were LiveJournal (N = 3), Xanga (N = 1), Buzznet (N = 1), and HI5 (N = 1). It was also found that the majority of social networking site users have been members for over a year (92.5%). Only 2.2% of the sample reported being members for less than 6 months. As to the primary purpose for using these sites, most students acknowledged they primarily use the site to talk to existing friends already in their offline social network (76.6%). Approximately 22% reported that they primarily use the site for both talking to existing friends and to make new friends. Less than 1% of the sample (N=3) indicated that they use the site primarily to make new friends or meet new people. Time spent on these social networking sites was also examined. Approximately 69% of social networking site users indicated that they use a social networking site every day. The majority check the site 1 to 2 times per day (40.7%), though approximately 13% of the sample reported using the site 10 or more times a day. Most users spend about 10 to 15 minutes on the site (43.2%), while 20% report using the site for 30 minutes or more each time they log on. Two participants stated that they “never turn it off” and constantly check the site.

Examination of the Modified GPIUS

Because the GPIUS measure was modified in our study to assess problematic social networking site use, rather than problematic Internet use in general, reliability and validity were

explored for the measure in our study. A reliability analysis of the modified GPIUS measure revealed an internal consistency of 0.92, indicating that with this sample, the items in the measure are highly intercorrelated. A possible conclusion is that the items are related by the common latent construct of problematic social networking site use.

To provide an indication of validity, GPIUS scores were examined in relation to participants' responses to the questions: (a) "Has anyone ever told you that your use of online social networking sites like MySpace or Facebook is problematic or interferes with your life (daily functioning)?", and (b) "Do you feel that your use of online social networking sites like MySpace or Facebook is problematic or interferes with your life (daily functioning?)" If the measure indeed assesses problematic social networking site use, it is expected that those who answered *yes* to either of these questions would have higher scores on the GPIUS than those who answered *no*. Analyses were conducted to compare the GPIUS means for the group who answered *yes* for either question to the group who answered *no*. On average, those who answered *yes* to the first question ($M = 76.31$, $SD = 13.12$) had higher GPIUS scores than those who answered *no* ($M = 62.32$, $SD = 15.05$). This difference was significant ($t = 5.42$, $p < 0.001$), suggesting that individuals who have had a someone tell them that their use of social networking sites may be problematic have on average higher GPIUS scores than those individuals who have not experienced this. For the second question, those who answered *yes* ($M = 77.59$, $SD = 13.10$) also had higher GPIUS scores than those who answered *no* ($M = 62.36$, $SD = 14.98$). Again, this difference was significant ($t = 5.62$, $p < 0.001$), suggesting that individuals who feel that their own use of social networking sites may be problematic have on average higher GPIUS scores than those individuals who do not feel this way. These results indicate that higher GPIUS scores

may be suggestive of a problematic relationship with social networking sites, and therefore lend validity to the measure utilized in our study.

Prediction 1: Prevalence of Problematic Social Networking Site Use

The first aim of our study was to explore whether a problematic relationship with the use of social networking sites like MySpace and Facebook exists in a college undergraduate population. It was hypothesized that a range of scores would be found for the measure of problematic social networking site use, including scores indicating a high presence of symptoms of problematic use. To explore this prediction, the scores of the modified GPIUS were examined. Scores may range from 29 to 145. For users of social networking sites in this sample, GPIUS scores ranged from 29 to 128, with a mean of 63.79 (SD = 15.45). Scores were normally distributed. Refer to Table 4-1 for a summary of the score distribution. A definable cut-off score which would indicate problematic versus non-problematic use was not developed for this measure so it is impossible to give a definitive classification of problematic users versus non-problematic users. However, participants showed a range of scores on this measure, with a number of participants scoring high. Higher scores indicate more "symptoms" of problematic social networking site use. Some indication of prevalence of problematic use may be gained by considering that answering neutrally to every item would give a score of 87. In this sample, 5.7% of social networking site users had scores higher than an 87. Therefore, this portion of the participants endorsed at least some of the symptoms of problematic social networking site use. A series of post-hoc analyses were conducted to determine if demographic variables varied for the group with GPIUS scores above 87 compared to the group with GPIUS scores below 87. The analyses found no significant difference between the high group and the lower group with respect to gender, race/ethnicity, and student status.

Table 4-1. Distribution of GPIUS Scores

Score Range	*Percentage*	*Cumulative Percentage*
29-38	6.3%	6.3%
39-48	10.0%	16.3%
49-58	19.4%	35.7%
59-68	24.8%	60.5%
69-78	23.6%	84.1%
79-88	10.8%	94.9%
89-98	3.4%	98.3%
99-108	1.1%	99.4%
109-118	0.3%	99.7%
119-128	0.3%	100.0%

Providing further evidence of the existence of problematic use of social networking sites, 10.6% of the sample indicated that they had had someone tell them that their use of social networking sites like Facebook or MySpace was problematic or interfered with their life. Approximately 9% admitted that they felt their own site use was problematic or interfered with their daily functioning. Taken together, these results provide tentative evidence for the existence of problematic social networking site use, and therefore, support for prediction 1.

Prediction 2: Predictors of Problematic Social Networking Site Use

The second prediction of our study hypothesized that the degree to which a person belongs to an offline social network mediates the relationship between social anxiety and problematic social networking site use. To test this hypothesis, a series of regression analyses are suggested by Baron and Kenny (1986). This is the most common method of mediation testing used in research (Fritz & MacKinnon, 2007). Baron and Kenny (1986) state that a variable functions as a mediator if it accounts for the relationship between the predictor and outcome variable. In other words, a mediator helps to explain why a relationship between two variables exists. To determine if a variable is indeed a mediator, Baron and Kenny propose that three guidelines must be met.

First, the predictor variable must account for variations in the outcome variable. Second, the mediator also must account for variations in the outcome variable. Finally, when the mediator is controlled for, the relationship between the predictor and the outcome variable drops significantly in the case of partial mediation, or becomes non-significant in the case of full mediation.

In our study, it was hypothesized that the degree to which a person belongs to an offline social network mediates the relationship between social anxiety and problematic social networking site use. Three sub-predictions were made in addition to the mediation prediction in order to meet Baron and Kenny's (1986) guidelines for mediation testing. These were as follows:

(1) the degree of social anxiety is positively related to problematic use of social networking sites, (2) the degree to which a person belongs to an offline social network is negatively related to problematic social networking site use, and (3) the degree of social anxiety is negatively related to the degree to which a person belongs to an offline social network. To determine if these sub-predictions would be supported, the correlation coefficients relating these variables were examined. Social anxiety was indicated by SAD scores (M = 6.55, SD = 5.77). Belonging was indicated by ISEL scores (M = 9.48, SD = 2.13). GPIUS scores indicated problematic social networking site use. The score distributions for both the SAD and ISEL measures were highly skewed and therefore before analyses could be conducted, square root transformations were performed to correct for non-normality. After performing the transformations, skewness and kurtosis for both measures were within acceptable ranges (Tabachnick & Fidell, 1996). Pearson product-moment correlations were then examined for the three variables. Table 4-2 displays the results.

Two of the sub-predictions were supported. Social anxiety was found to be positively related to problematic social networking site use ($r = 0.218$, $p < 0.001$), as well as negatively related to the degree to which a person belongs to an offline social network ($r = -0.377$, $p < 0.001$). However, one sub-prediction was not supported. The degree to which a person belongs to an offline social network, as indicated by ISEL scores, was not significantly related to problematic social networking site use, as indicated by GPIUS scores. Because of this, running a series of regression analyses to test the mediation hypothesis would be inappropriate. Therefore, prediction 2 was not supported by the results of our study. The degree of belonging to an offline social network was not found to mediate the relationship between social anxiety and problematic social networking site use for this sample.

Table 4-2. Correlations Among Problematic Social Networking Site Use (GPIUS scores), Social Anxiety (SAD scores), and Belonging (ISEL scores)

	GPIUS	*SAD*	*ISEL*
GPIUS	---	0.218*	-0.042
SAD	0.218*	---	-0.377*
ISEL	-0.042	-0.377*	---

* $p < 0.001$

However, it was interesting to note that the well-being variable of loneliness, another variable included in our study that is closely related to belonging, did show a significant relationship to problematic social networking site use ($r = 0.281$, $p < 0.001$), as well as to social anxiety ($r = 0.564$, $p < 0.001$). Though the constructs of belonging and loneliness do differ, they are both associated with interpersonal relatedness (Hagerty, Williams, Coyne, & Early, 1996). These two concepts have been shown to be highly related in the literature (Hagerty et al., 1992), and in our study, sense of belonging was significantly related with loneliness ($r = -.481$, $p < .001$). In addition, research in the area of general PIU has supported a significant relationship between loneliness and PIU (Caplan, 2003; Morahan-Martin & Schumacher, 2000; Nalwa & Anand, 2003). Given the non-existence of research in the area of problematic social networking site use, we felt it appropriate to explore this other variable of interpersonal relatedness – loneliness – as a mediator of the relationship between social anxiety and problematic use, though a prediction about this relationship was not included in the original hypotheses. It may be that the degree of interpersonal relatedness does indeed mediate the relationship between social anxiety and problematic social networking site use, but the construct of loneliness is a more appropriate representation of this relatedness than the construct of belonging for this sample of college students.

A mediation analysis was conducted to determine if loneliness could be considered a mediator of the relationship between social anxiety and problematic social networking site use. In this newly hypothesized mediation model (see Figure 4-1), social anxiety (SAD score) functions as the predictor variable, loneliness (UCLA scores) as the mediator, and problematic social networking site use (GPIUS score) as the outcome variable. The mediation guidelines proposed by Baron and Kenny (1986) were followed to test this model.

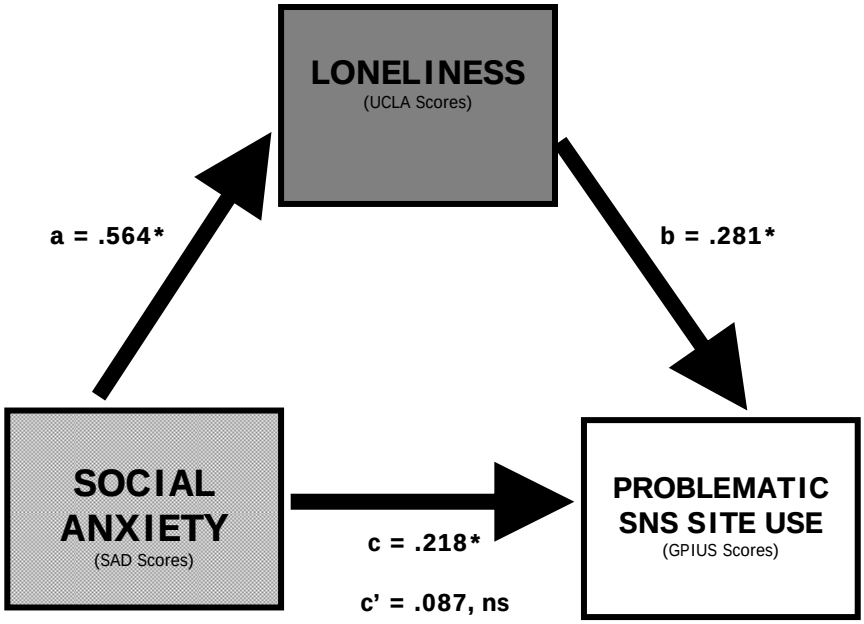

Figure 4-1. Mediation model. Values reflect standardized coefficients. *p < 0.001

To establish a relationship between the predictor, social anxiety (SAD scores), and the outcome variable, problematic social networking site use (GPIUS scores), a simple regression was conducted (path *c* in figure 4-1). It was found that social anxiety significantly predicted (β = .218, $p < .001$) problematic social networking site use and explained approximately 5% of the variance ($R^2 = .048$, $F(1, 348) = 17.398$, $p < .001$) in GPIUS scores. Given this result, Baron and Kenny's (1986) first guideline for mediation was met.

A second regression was run to establish a relationship between the mediator of loneliness and the outcome variable of problematic social networking site use (path *b* in figure 4-1). UCLA scores were entered as the independent variable and GPIUS scores as the dependent variable. Loneliness was found to be a significant predictor ($\beta = .281$, $p < .001$) of problematic social networking site use and accounted for approximately 8% of the variance ($R^2 = .079$, $F(1, 348) = 29.921$, $p < .001$) in GPIUS scores. Therefore, Baron and Kenny's (1986) second guideline for mediation was met.

Although not required by Baron and Kenny (1986), a third regression was conducted to establish a relationship between the predictor, social anxiety, and the mediator, loneliness (path *a* in figure 4-1). SAD scores were entered as the independent variable and UCLA scores as the dependent variable. Social anxiety was found to be a significant predictor ($\beta = .564$, $p < .001$) of loneliness and accounted for approximately 32% of the variance ($R^2 = .318$, $F(1, 348) = 162.340$, $p < .001$) in UCLA scores.

Finally, to satisfy the third guideline for mediation, a multiple regression was conducted with SAD and UCLA scores as the independent variables and GPIUS scores as the dependent variable. This was done in order to control for the effect of the mediator, loneliness, on the relationship between social anxiety and problematic social networking site use (path *c'* in figure

4-1). A concern with multiple regression analysis is multicollinearity. Therefore, a check of collinearity diagnostics (i.e., variance inflation factor (VIF) and tolerance) was included in the multiple regression. VIFs greater than 10.0 and tolerance values less than .02 raise concerns for multicollinearity (Bowerman & O'Connell, 1990; Menard, 1995). The VIF (i.e., 1.466) and tolerance (i.e., .682) values were within the acceptable range for the multiple regression in our study.

The result of the multiple regression indicated that together the predictors explained almost 9% of the variance ($R^2 = .084$, $F(1,348) = 15.986$, $p < .001$) in GPIUS scores. According to Baron and Kenny (1986), if the previously significant relationship between the predictor and the outcome is no longer significant or has been reduced when the effect of the mediator is controlled for, this indicates full (in the case of the former) or partial (in the case of the latter) mediation. The results seem to support full mediation in this model. Examining the standardized regression coefficients, the relationship between the mediator of loneliness and the outcome variable of problematic social networking site use (path *b*) remains significant ($\beta = .232$, $p < .001$), whereas the relationship between the predictor of social anxiety and the outcome variable of problematic social networking site use (path *c*, now *c'*) is now non-significant ($\beta = .087$, $p = .162$). This result fulfills Baron and Kenny's final guideline for proving mediation. The findings lend evidence for a model of loneliness as a mediator of the relationship between social anxiety and problematic social networking site use.

Although Baron and Kenny (1986) did not require any additional steps for establishing mediation other than those outlined in this paper, many researchers (Frazier, Mortensen, & Steward, 2005) advocate the use of Sobel's test (Sobel, 1982) to determine if the reduction in the relationship between the predictor and the outcome variable is significant when the mediator is

controlled for. Sobel's test divides the mediated effect by a standard error term defined by Sobel to yield a *z* score. The *z* score is then compared to 1.96. If the score is greater, the reduction in the relationship between the predictor and outcome variable is significant at the .05 level and mediation is indicated. When Sobel's test was applied to the model in our study, the reduction in the relationship between social anxiety and problematic social networking site use while controlling for loneliness was significant (z-value = 5.019, $p < 0.001$), indicating that loneliness is a mediator of the relationship between social anxiety and problematic social networking site use.

Though our study did not find support for belonging as a mediator (prediction 2), it was able to provide evidence that another indicator of interpersonal relatedness – loneliness – contributes to the relationship between social anxiety and problematic use of social networking sites.

Prediction 3: Problematic Social Networking Site Use & Well-Being

The third main aim of our study was to examine the relationship between the problematic use of social networking sites and well-being. Specifically, a significant negative relationship was predicted between problematic social networking site use and the well-being indicators of self-esteem, happiness, and satisfaction with life, and a significant positive relationship was expected between problematic social networking site use and the well-being indicators of depression and loneliness. Means and standard deviations for the well-being measures are reported in Table 4-3. All five well-being variables were highly skewed and therefore before analyses could be conducted, square root transformations were performed to correct for non-normality. After performing the transformation, skewness and kurtosis for all measures were within acceptable ranges (Tabachnick & Fidell, 1996). Pearson product-moment correlations were then calculated utilizing GPIUS scores and the scores from the measures assessing the

Table 4-3. Means and Standard Deviations of Well-Being Variables for Social Networking Site Users

Well-Being Variable	*Mean*	*Standard Deviation*
Satisfaction With Life (SWL)	25.37	5.50
Loneliness (UCLA)	39.58	8.96
Depression (CES-D)	12.91	9.18
Self-Esteem (RSE)	21.84	4.84
Happiness (OHQ)	128.99	19.20
Social Anxiety (SAD)	10.70	6.31

well-being variables. Correlation coefficients are reported in Table 4-4. One-tailed significance tests were utilized due to the prediction of relationship directions. The results fully support prediction 3 of our study. GPIUS scores were found to be significantly correlated with the variables of well-being in the expected directions. A higher degree of problematic social networking site use (GPIUS scores) was found to be related to lower well-being, as indicated by greater levels of loneliness and depression, and lower levels of happiness, self-esteem, and satisfaction with life. All correlation coefficients indicated a moderate effect size (defined as r = .30; Cohen, 1977) for the relationship of the well-being variables to problematic social networking site use, with the exception of the coefficient for *satisfaction with life*, which indicated a small effect size (defined as r = .10; Cohen, 1977).

A series of post-hoc analyses were conducted to explore how the mean scores on the well-being variables for the group considered problematic social networking site users (i.e., individuals with GPIUS scores greater than 87) compared to the group with GPIUS scores less than 87. The means and standard deviations of the well-being variables for the group of problematic social networking site users and non-problematic users can be found in Table 4-5. Greater well-being is indicated by higher scores on the *satisfaction with life*, *self-esteem*, and *happiness* variables, as well as lower scores on the *depression*, *loneliness*, and *social anxiety* variables. Problematic users significantly differed from non-problematic users on the well-being variables of *loneliness* ($t = 4.20$, $p < 0.001$), *depression* ($t = 3.70$, $p < 0.001$), *self-esteem* ($t = -2.41$, $p < 0.05$), *happiness* ($t = -2.82$, $p < 0.01$), and *social anxiety* ($t = 3.27$, $p = 0.001$), indicating that problematic users have lower levels of well-being than non-problematic users. The two groups did not significantly differ on the variable of *satisfaction with life*.

Table 4-4. Correlations Between Well-Being Variables and Problematic Social Networking Site Use (GPIUS Scores)

Well-Being Variable	*Problematic Social Networking Site Use (GPIUS scores)*
Satisfaction With Life (SWL)	-0.134*
Loneliness (UCLA)	0.281**
Depression (CES-D)	0.281**
Self-Esteem (RSE)	-0.299**
Happiness (OHQ)	-0.282**

* $p < 0.01$ ** $p < 0.001$

Table 4-5. Means and Standard Deviations of Well-Being Variables for Problematic Social Networking Site Users (GPIUS > 87) and Non-Problematic Users (GPIUS < 88)

Well-Being Variable	*Problematic User*	*Non-problematic User*
Satisfaction With Life (SWL)	23.68 (SD 5.15)	25.47 (SD 5.51)
Happiness (OHQ)	117.04 (SD 19.53)	129.68 (SD 18.99)
Self-Esteem (RSE)	19.26 (SD 4.50)	21.99 (SD 4.82)
Loneliness (UCLA)	47.79 (SD 7.89)	39.11 (SD 8.80)
Depression (CES-D)	20.36 (SD 10.32)	12.48 (SD 8.94)
Social Anxiety (SAD)	10.70 (SD 6.37)	6.31 (SD 6.65)

CHAPTER 5
DISCUSSION

Our study's overall aim was to explore the topic of college students' usage of social networking sites and how site use may become problematic or "addictive." The predictions put forth in our study were primarily based on the limited research that has been conducted in the area of general problematic Internet use or Internet addiction. It was the goal of our study to add to this existing literature by examining whether a dependency on a specific Internet application – social networking sites – could exist. In addition, possible predictors of problematic social networking site use were explored, as well as the relationship of problematic use with well-being for college students.

Review of Study Findings

Social Networking Site Use

The percentage of participants that identified themselves as social networking site users in our study came as no surprise given the popularity of these sites that has been reported in the media (Owyang, 2008). Our study confirmed that social networking sites are a prominent part of social communication among college students. Additionally, given that a large majority of study participants indicated that they have been social networking site users for over a year, it is clear that these sites have embedded themselves in the university culture. They have also become a part of the college student's daily life, as a majority of respondents use one or more social networking sites every day, at least one to two times per day, for about 10 to 15 minutes at a time. Also, the recent surge in popularity of the site Facebook over the site MySpace was supported by our study results, with almost all of the study participants listing themselves as Facebook members, while only half acknowledged a membership in MySpace. Taken together,

these results certainly support the idea that this generation of youths is a wired one and that the term Net Generation or MySpace Generation (Hempel, 2005) is well earned.

Another interesting finding was that the majority of study participants reported using social networking sites for staying in touch with existing friends already in their offline social network. This finding adds to the Internet literature which already has suggested the communicative applications of the Internet are used more for maintaining relationships rather than meeting strangers. In a survey of United States Internet users, D'Amico (1998) reported that 87% of the 1,001 respondents indicated that they use the Internet frequently to keep in touch with friends and family. College students in particular spend time talking to friends and family online. Scherer (1997) found that 98% of college student participants in his study reported using the Internet for maintaining relationships with family and friends. Additionally, Gross (2004) found that the majority of adolescent Internet users used the communication functions of the Internet to talk with already existing, offline friends rather than strangers. Specific to social networking sites, Ellison and colleagues (2007) reported that the Facebook users in their study indicated using the social networking site for communicating with people with whom they share an offline connection significantly more than for meeting new people.

Measure of Problematic Social Networking Site Use

Our study also made a contribution towards the measurement of the problematic use of a specific Internet application (i.e., social networking sites), rather than problematic use of the Internet in general. The modified measure utilized in our study to assess problematic social networking site use was found to have high internal consistency. The validity of the measure was indicated by showing that those who felt they had a problematic relationship with social networking sites or who had been told that they may have a problematic relationship showed significantly higher scores on the modified measure than those who did not feel or who had not

been told they had a problematic relationship. In addition, the measure's correlation with constructs such as social anxiety and well-being measures in the expected directions (Caplan, 2002, 2007; Morahan-Martin & Schumacher, 2000; Nalwa & Anand, 2003; Yen et al., 2007; Young & Rogers, 1998) also provided evidence for the validity of this measure. To our knowledge, no other study has examined problematic use of social networking sites, and certainly a measure to assess it has not been created previously. Therefore, the modification of the GPIUS to create an assessment of problematic social networking site use in our study is novel and could potentially contribute to future assessment in this area.

Prediction 1: Existence of Problematic Social Networking Site Use

The first and most important aim of our study was to explore whether a problematic relationship with social networking sites may exist in a population of college students. The range of scores found on the GPIUS measure support the notion that some students are experiencing a problematic relationship with social networking sites and encourages further exploration of this possibility. Students' GPIUS scores indicated that some individuals are using social networking sites to change their affective states and to gain greater social benefits and social control than they receive in face-to-face relationships. In addition, some students have a difficult time stopping their social networking site use and keeping themselves from using these sites, while also utilizing the sites for greater amounts of time than planned. Finally, students' scores also indicated that for some, these sites interfere with personal, social, and professional (academic) areas of their lives. Other support for the existence of problematic social networking site use was also found through two direct questions about problematic use; some study participants acknowledged that they felt or had been told that their use of social networking sites was problematic.

Given that the measure used to assess problematic use (i.e., the GPIUS) did not have a definitive cut-off point which would differentiate problematic users from non-users, as well as the restricted range of GPIUS scores and a low prevalence rate found in our study, it is difficult to say with certainty that problematic social networking site use is an identified phenomenon. A comparison of the range of GPIUS scores for this sample with findings from other studies using this measure (Caplan, 2002; 2003; 2007) are precluded by the fact that the other studies have utilized individual subscales of the GPIUS rather than a sum score, as in our study. However, like our study, Caplan showed in his study a restricted range in PIU scores and a low prevalence of general PIU in the undergraduates he sampled. To give some indicator of prevalence, he showed that the percentage of students endorsing symptoms of PIU ranged from 5-15% of the sample, depending on the individual subscale (Caplan, 2006). In our study, 5-10% of the sample could be considered problematic social networking site users, taking into account both GPIUS scores and responses to the two direct questions about problematic use. This prevalence rate is comparable to other prevalence rates found for general PIU in the literature. Utilizing the Pathological Internet Use Scale (PIUS; Morahan-Martin & Schumacher, 2000), Morahan-Martin and Schumacher classified 8.1% of their undergraduate sample as pathological Internet users, while Niemz and colleagues (2005), utilizing this same measure, found 18.3% of the undergraduates surveyed to be pathological Internet users. Scherer (1997) found 13% of undergraduates sampled in his study to be Internet dependents, as classified using criteria paralleling chemical dependencies. Finally, Greenfield (1999) utilized an online survey of Internet use and behavior to explore a general population. He found that of the 17,251 individuals (aged 8-85 yrs) surveyed, approximately 6% met the criteria for Internet addiction.

Though some of these prevalence rates are higher than the rate found in our study, the intended purpose of the assessment instruments utilized in these studies should be considered when comparing these prevalence findings. Beard (2005) highlights that assessment instruments of general problematic Internet use or Internet addiction do not take into account the different types of Internet applications that a person could be dependent upon. Therefore, caution should be used when comparing findings from our study assessing a specific type of Internet dependency to prevalence rates indicated for general Internet dependency. For example, the instruments used in these studies of general PIU could be tapping into a dependency upon online gaming or online gambling, which may be more prevalent than say a dependency upon social networking sites. In addition, many of the assessment instruments assume that excessive Internet use denotes problematic Internet use, and do not take into account that elevated Internet usage may be due to academic or work requirements (Widyanto & Griffiths, 2005). Other studies have cited the cut-off point of many of the instruments used to assess Internet dependency as being too liberal, resulting in inflated prevalence estimates (Niemz et al., 2005).

What can be definitively concluded from our study is that overall, the population of college students sampled might best be characterized as a non-pathological sample with largely normative levels of social networking site use. Nevertheless, social networking site use could be characterized as problematic for perhaps 5-10% of the sample. This prevalence rate is on par with other rates of mental health disorders found in the DSM-IV (APA, 2000), as pointed out by Watson (2005). Additionally, Hall and Parsons (2001), noting the discrepancies in the Internet addiction prevalence rates found in the literature, concluded that even a conservative estimate of 6% is worrisome and warrants further research. With social networking sites like MySpace and Facebook becoming some of the most-trafficked websites in the world, even the possibility that

the use of these types of sites may become problematic for some individuals is cause for concern. The findings of our study, then, encourage further investigation of problematic social networking site use.

Evidence found by our study in support of the existence of problematic social networking site use is in line with research that has implicated the communication functions of the Internet as commonly used applications by general "Internet addicts" (Chou et al., 1999; Chou & Hsiao, 2000; Young, 1996a). Our study's findings could also be considered supportive of the literature that suggests the classification of "Internet addiction" in the next version of the DSM (APA, 1995). Proponents of the addition of Internet addiction suggest that individuals can become dependent on the environment of the Internet, and not simply to an application on the Internet which provides another way of engaging in an addiction that already exists offline (Yellowlees & Marks, 2007). Though our study found support for a dependency on a specific Internet application (i.e., social networking sites), the service this application provides is not available offline, like gambling or shopping may be. In other words, social networking sites provide a social environment unique to the Internet. It is a social atmosphere in which the normal auditory and visual cues that accompany offline communication are missing (Morahan-Martin & Schumacher, 2000), creating a less-threatening environment for social interaction. In this case, the Internet is not providing the users with a way of engaging in an addiction they would already have offline, such as a gambling addict using an online gaming casino instead of an offline casino. Rather, social networking sites provide an environment in which a person can socially interact in a less-threatening atmosphere that cannot be gained offline (Morahan-Martin & Schumacher, 2000; Peter et al., 2005). In the debate over classification of Internet addiction, our study seems to fall on the side which supports that dependency on the unique environment of the

Internet itself can occur, as opposed to the Internet providing another forum for engaging in a pre-existing addiction.

Prediction 2: Predictors of Problematic Social Networking Site Use

The second aim of our study was to examine how the concepts of social anxiety and belonging to an offline social network may contribute to the development of problematic social networking site use. Specifically, belonging to an offline social network was explored as a possible mediator of the relationship between social anxiety and problematic social networking site use. Within this mediation model, support was required for a number of sub-predictions in order to test the model. Most importantly, evidence for a significant positive relationship between the predictor variable, social anxiety, and the outcome variable, problematic social networking site use, was found. Higher levels of social anxiety were associated with greater levels of problematic social networking site use in this sample of college students. Individuals who suffer anxiety in offline social environments may be more likely to develop a problematic relationship with the use of social networking sites than those who do not suffer from social anxiety. This finding is in line with the etiology of PIU development suggested by Caplan (2007), who proposed that socially anxious people prefer situations which minimize their social risk and the Internet can provide this less-threatening social atmosphere. The maladaptive cognitions associated with social anxiety result in a preference for online communication, and the social interaction gained by the individual in a less-threatening way reinforces the individual's dependence on this online environment for social interaction. PIU can then develop, or in this case, problematic social networking site use.

Belonging was chosen as a possible mediator of this relationship between social anxiety and problematic use because inherent in this relationship is the assumption that social networking sites have become reinforcing for the socially anxious individual due to a need that is

being fulfilled. Socially anxious individuals have been shown to have fewer friendships, and therefore a need to belong exists (Gambrill, 1996; La Greca & Lopez, 1998). Social networking sites were thought to be able to fulfill this need by providing a less-threatening social environment, and that PIU could develop due to the need fulfillment provided by these sites (Chou et al., 1999; Suler, 1999). However, our study failed to find support for belonging as a mediator, as it was not found to be significantly related to problematic social networking site use.

Failure to find evidence for this relationship may be explained by the fact that most of the study participants indicated they use social networking sites more for staying in contact with existing friends in their social network rather than meeting strangers and making new friends. The prediction of belonging as a mediator rested upon an assumption that socially anxious individuals were using these sites to make new friends due to a lack of belonging to a current offline network. However, it seems that these sites are structured in such a way as to entice those with pre-existing social networks to use the sites for maintaining friendships or meeting "friends of friends" (Boyd & Ellison, 2007), rather than as an avenue for meeting strangers and making new friends. Therefore, it may not be a lack of current friendships that is the driving need to use social networking sites. However, another variable of interpersonal relatedness may be the answer.

Despite the failure to find support for belonging as a mediator, another indicator of interpersonal relatedness – loneliness – seems to have potential. Though belonging and loneliness are both indicators of interpersonal relatedness, they differ in their meanings (Hagerty et al., 1992). In our study, belonging, as measured by the ISEL, was characterized as the perceived availability of friends which one can spend time with. This type of belonging is observable, as it can be behaviorally detected via group membership. Loneliness, on the other

hand, is a negative emotional or affective state in which a need for personal connectedness exists, often due to a disruption that has occurred which resulted in an absence or loss (Hagerty et al., 1992). A lack of belonging, therefore, is a physical lack of relationships whereas loneliness is the feeling of non-intimacy or connectedness. Research has supported the idea that loneliness can occur when one is dissatisfied with existing relationships (Cutrona, Russell, & Peplau, 1979) rather than simply from a lack of belonging. Findings indicate that loneliness is more related to the quality of one's social connections as opposed to the quantity of connections (Jackson, Soderlind, & Weiss, 2008). Loneliness is decreased when a person feels intimacy and closeness in their relationships (Jones, Carpenter, & Quintana, 1985) and feels supported by others (Pierce, Sarason, & Sarason, 1991). Hagerty and colleagues illustrate with a case vignette how one can have personal relationships (belong) but still feel lonely.

> Marie moved to a town where she knew no one. The first several weeks she spent much of her time unpacking and finding her way around. She did spend time with her new neighbors and coworkers, all of whom seemed to really enjoy her company. Yet Marie felt very alone, unhappy, and isolated without her friends and family.

This case mirrors the transition that many college students must make from their hometown high school where they may have had a number of friends and family to a university where they may know no one. Loneliness is quite prevalent among college students despite the great number of social opportunities for belonging that exist in a college environment (Jones, Freemon, & Goswick, 1981).

In our study, loneliness was found to be significantly related to social anxiety and problematic social networking site use. The link between social anxiety and loneliness has been supported in the literature (Inderbitzen-Pisaruk, Clark, & Solano, 1992) and research suggests that socially anxious individuals perceive less intimacy and supportiveness in their existing friendships (La Greca & Lopez, 1998). In addition, a link between loneliness and general

problematic Internet use has been found (Caplan, 2003; Morahan-Martin & Schumacher, 2000; Nalwa & Anand, 2003). Though a prediction regarding a mediation model positing loneliness as the mediator between social anxiety and problematic social networking site use was not made at the start of our study, the failure of our study to find support for belonging as a mediator prompted the exploration of this new mediation model. Our study found support for loneliness as a mediator. It may be that the need driving socially anxious individuals to utilize social networking sites is not a lack of friendships (belonging) but a lack of intimacy in friendships (loneliness). Instead of using these sites to meet strangers and make friends, the sites are utilized for enhancing relationships with existing friends. Socially anxious individuals who may feel loneliness and desire more closeness in their relationships may turn to social networking sites to fulfill this desire and relieve their feelings of loneliness by gaining more intimacy in their current offline relationships. This need fulfillment and reinforcement may then develop into problematic social networking site use, as suggested by Caplan (2007) and Suler (1999).

Studies have shown that the Internet does indeed provide an opportunity to increase closeness in offline relationships. Valkenburg and Peter (2007) examined how online communication with existing friends affects the offline relationship with these same friends. Their stimulation hypothesis proposed that specific characteristics of the Internet encourage self-disclosure more readily in online relationships than in face-to-face relationships. Self-disclosure is important for building intimate relationships (Collins & Miller, 1994), and therefore communicating with friends online could increase the amount of self-disclosure, and hence intimacy, that takes place in the relationship. A number of studies have found support for increased self-disclosure in online communication, not only between strangers, but also between existing friends (Grinter & Palen, 2002; Leung, 2002). Valkenburg and Peter provided evidence

for the stimulation hypothesis by collecting data from 794 adolescents. They found that for adolescents who use the Internet to communicate with existing friends, more online communication resulted in more perceived intimacy in friendships even when offline.

In conclusion, our study supports a model in which loneliness, or the need for closeness in relationships, mediates the relationship between social anxiety and problematic social networking site use. Support for a model positing belonging, or the availability of friends, as a mediator of this relationship was not found for this sample of college students. The findings indicate that socially anxious individuals may use social networking sites to fulfill a need for closeness in existing relationships and that they may become dependent upon this online environment for this need fulfillment.

Prediction 3: Problematic Social Networking Site Use and Well-Being

The final aim of our study was to explore the relationship between problematic social networking site use and well-being in college students. It was predicted that problematic use would be related to decreased well-being. Literature showing a relationship between general PIU and well-being was utilized as support for this prediction (Caplan, 2002; Morahan-Martin & Schumacher, 2003; Young & Rogers, 1998). To represent well-being, measures of depression, loneliness, self-esteem, happiness, and satisfaction with life were used. All five of the well-being indicators showed a significant relationship with problematic social networking site use in the expected directions, and therefore prediction 3 was fully supported. Results indicated that individuals showing greater symptoms of problematic use also had more symptoms of depression, loneliness, and unhappiness, as well as having lower self-esteem and less satisfaction with their lives.

Given the lack of an experimental design of our study, it is impossible to determine causality in the relationship between problematic social networking site use and well-being. Support can be found in the literature for both of these causal paths.

First, it could be that this relationship exists because those suffering from decreased well-being are more likely to develop PIU. As Davis's (2001) model of PIU development explains, a pre-existing psychopathology or condition could make a person more vulnerable to PIU development should a stressor occur. Our study has shown support for a model which suggests social anxiety and the associated loneliness as contributors to the development of problematic social networking site use. Loneliness has been shown in the literature to be associated with decreased well-being (Weiss, 1974). A link has been well-established between loneliness or a lack of closeness in relationships and the development of depression (Russell, Cutrona, Rose, and Yurko, 1984). Loneliness has also been found to be related to low self-esteem (Leary, 1990) and unhappiness (Argyle, 1987; Freedman, 1978). Other evidence of the connection between closeness in relationships and well-being can be seen in the counseling literature. Baumeister and Leary (1995) emphasize the contribution of the therapeutic relationship in psychotherapeutic progress (Rogers, 1959) as support for the association of relationship closeness with well-being. These findings taken together suggest that the decreased well-being associated with loneliness could be an additional factor in the development of problematic social networking site use, and are indicative of a path in which decreased well-being leads to problematic use.

However, this relationship could also exist because problematic use causes a negative impact on an individual's well-being. Support for this causal path can be found in Davis's (2001) model of general PIU development. He suggests that maladaptive cognitions lead to PIU development and help maintain problematic use. These maladaptive cognitions include

cognitions about the self which result in self-doubt, low self-efficacy, and negative self-appraisals (e.g., “I am worthless offline, but online I am somebody,” “I am a failure when I am offline”). In addition, thoughts about the world involve the generalization of specific events to global patterns or engagement in all-or-nothing type thinking (e.g., “Nobody loves me offline,” “The Internet is the only place I am respected”). These maladaptive cognitions associated with PIU may lead to a decrease in self-esteem, happiness, and satisfaction with life. Additionally, research has indicated a strong link between maladaptive cognitions and the development of depression (Beck, 1993). Finally, general PIU has been shown to interfere with normal daily functioning in many areas of an individual’s life (Scherer, 1997; Young, 1998). Therefore, the interference in daily functioning that problematic social networking site use may cause could also lead to decreased well-being. Thus, these findings lend support to a causal path in which problematic social networking site use causes a decrease in well-being.

Given that research findings provide evidence for both causal pathways between problematic social networking site use and well-being, it is most likely that both of these paths are correct. Decreased well-being may make one susceptible to developing a problematic relationship with social networking sites, but the maladaptive cognitions that maintain problematic use may further decrease well-being (Caplan, 2003; Davis, 2001). Though our study cannot draw conclusions either way about the causality in the relationship between well-being and problematic social networking site use, the establishment of a relationship between these two constructs, and thus support for prediction 3, is an excellent beginning in the research of this novel area.

Study Implications

First, our study is important in its novel contribution to an area with very limited research but an area with much importance. Given the extensive use of social networking sites, especially

on college campuses, the usage of these sites and the impact they may have should be of interest to researchers and to university counselors. Counselors should be aware of the potential problematic relationship or dependency that college students could develop with social networking sites, and how this may interfere with personal, social, and academic functioning, as well as impact students' mental health. In a survey of university counselors, Kiralla (2005) found that approximately 84% of counselors believed that problematic Internet use is a legitimate concern for students, but 93% said they did not have sufficient training regarding the diagnosis or treatment of PIU. In addition to training counselors on general PIU, counselors should also be made aware of the potentially addictive nature of social networking sites. Information also needs to be given to students as to how the use of the Internet and social networking sites can become problematic and interfere with their lives. Scherer (1997) notes that many college students are not even aware that dependency or problematic usage can develop with the Internet, and that it is the responsibility of counselors to make students aware of the symptoms and available services. Many university counseling centers are now online, and given the centrality that the Internet plays in problematic users' lives, this may be the perfect place to begin the dissemination of important information regarding the symptoms and effects of general PIU and problematic social networking site use, as well as the available services for those who may struggle with these issues. Many of the PIU assessment instruments are already available as simple checklists (e.g., Young's *Internet Addiction DQ*) that could be put online for students to self-assess their PIU potential.

Counselors can also benefit from our study by learning more about the attraction that social networking sites may hold for socially anxious individuals and how these sites can both be beneficial and detrimental for them. Though our study explores the detrimental side of site use,

social networking sites may also provide an excellent tool for socially anxious individuals. Amichai-Hamburger and Furnham (2007) note that socially inhibited people may benefit from the non-threatening environment the Internet allows for acquiring, practicing, and improving social skills if they can transfer these skills to offline social interactions. For some, the transfer of social skills acquired on the Internet to face-to-face relationships may be natural (McKenna, Greene, & Gleason, 2002), while for others with more severe social anxiety, this ability may be more limited. Amichai-Hamburger and Furnham propose that even very socially anxious individuals can learn to transfer online social skills to offline relationships through a series of steps that gradually build the individual's exposure to face-to-face interactions via audio and video functions of the Internet. Therefore, social networking sites could be a valuable tool for counselors to use with socially anxious individuals if proper steps are taken to help socially anxious people avoid dependency on these sites for all social interaction and support.

Limitations

Our study has a number of limitations that should be noted. First, all of the measures used in our study are of a self-report nature. This allows for under- or over-reporting by students that may affect the reliability and validity of the study findings. Many of the constructs assessed in our study could be associated with shame, denial, or minimization, and this could also lead to under-reporting (Block, 2008). Additionally, due to the restricted range of GPIUS scores and a low prevalence rate, it cannot be concluded definitively that the problematic use of social networking sites exists, though our study certainly provides a starting point for further research in this area. Another limitation is that due to the lack of an experimental design, causal inferences cannot be made. Generalizability of our study findings is also limited to undergraduate students at a four-year university, and the predominantly female composition of the sample also limits the generalizability. Finally, our study does not include the numerous other

variables that may contribute to the relationships examined and therefore only a limited picture of problematic social networking site use is given. These limitations are reasonable given that little research about social networking sites has been conducted. The purpose of our study was to simply provide a foundation for the examination of social networking site use and the problematic relationship that can develop with the use of these sites. Future research exploring this topic in much more detail will certainly be needed.

Future Research

These limitations suggest a number of directions for future research on problematic social networking site use. First, a more accurate estimate of the prevalence of problematic use in the college population is most certainly needed. This suggests that development and validation of assessment instruments measuring problematic use should continue, and a measure with a designated cut-off point identifying problematic users versus non-problematic users may be warranted. Examining the prevalence of problematic social networking site use in populations other than college students, such as younger adolescents or adults, may also yield different and interesting findings. Future studies could also benefit from an experimental design in which conclusions regarding causality in the relationships explored in our study could be made. Finally, the predictors of problematic use included in our study only accounted for a small portion of the variance in scores indicating problematic social networking site use, and therefore other predictors of problematic use should be explored. Establishing variables which are predictive of problematic use and differentiating these from variables that are the result of problematic use could help guide practitioners in diagnosing and treating this issue.

These are just a small sampling of future directions for research in the area of problematic social networking site use. Given the non-existence of research in this area, much research is still needed. The numerous implications of this type of research coupled with a trend showing that

social networking sites are continuing to grow in popularity (Owyang, 2008) suggest the importance of continued growth in our knowledge about social networking site use and the impact these sites may have for users.

APPENDIX A
INTERPERSONAL SUPPORT EVALUATION LIST (ISEL) – BELONGING SCALE

This scale is made up of a list of statements each of which may or may not be true about you. Please check true if the statement applies to you most of the time or check false if the statement does not usually apply to you.

1. There are people at school or in town who I regularly run with, exercise with, play sports with, or do other enjoyable activities.

2. I hang out in a friend's room or apartment quite a lot.

3. I can find a person who I enjoy spending time with whenever I want.

4. If I decided at dinner time to take a study break this evening and go to a movie, I could easily find someone to go with me.

5. People hang out in my room or apartment during the day or in the evening.

6. I belong to a group at school or in town that meets regularly or does things together regularly.

7. I am not a member of any social groups (such as church groups, clubs, teams, etc.)

8. Lately, I often feel lonely, like I don't have anyone to reach out to.

9. I don't have friends at school or in town who would comfort me by showing some physical affection.

10. I don't often get invited to do things with other people.

11. I don't usually spend two evenings on the weekend doing something with others.

APPENDIX B
MODIFIED GENERALIZED PROBLEMATIC INTERNET USE SCALE (GPIUS)

Rate the extent to which you agree or disagree with each statement about your use of online social networking sites. Social networking sites are websites on the Internet where you can create a profile and connect with friends. Examples of these sites are MySpace, Facebook, or Friendster.

1. I have used social networking sites to talk with others when I was feeling isolated.

2. I can control how others perceive me when I am using a social networking site.

3. I find it hard to stop thinking about what is waiting for me online on the social networking site(s) I like to use.

4. I have gone on a social networking site to make myself feel better when I was down or anxious.

5. I have tried to stop using one or more social networking sites for such long periods of time.

6. When not on a social networking site, I wonder what is happening on that site.

7. When I am on a social networking site, I socialize with people without worrying about relationship commitment.

8. I have attempted to spend less time on social networking sites but have not been able to.

9. I am treated better by others while online using social networking sites than I am offline.

10. I use social networking sites to make myself feel better when I'm down.

11. I have missed class or work because of being online on a social networking site.

12. I feel worthless offline, but online on a social networking site I am someone.

13. I want to, or have made, unsuccessful efforts to cut down or control my use of one or more social networking sites.

14. I have missed a social event or social engagements because of being online on a social networking site.

15. I am more comfortable with computers than with people.

16. I feel guilty about the amount of time I spend on social networking sites.

17. When I am on a social networking site, I socialize with other people without worrying about how I look.

18. I lose track of time when I am using a social networking site.

19. I miss being online on a social networking site if I can't get on it.

20. I am treated better in my online relationships through social networking sites than in my face-to-face relationships.

21. I have used a social networking site for a longer time than I intended.

22. I am more confident socializing on social networking sites than I am offline.

23. I have used a social networking site for longer periods of time than I had expected to.

24. I feel safer relating to people online on social networking sites rather than face-to-face.

25. I feel lost if can't get on a social networking site.

26. I have spent a good deal of time using social networking sites.

27. I have gotten into trouble with my employer or school because of being online on a social networking site.

28. I am preoccupied with thinking about social networking sites if I can't connect for some time.

29. I have sought others online on social networking sites when I was feeling isolated.

APPENDIX C
SOCIAL AVOIDANCE AND DISTRESS SCALE (SAD)

For the following items, think about how the statement applies to you in your offline social life, not how you are online when using the Internet. Please check *true* if the statement applies to you most of the time or check *false* if the statement does not usually apply to you.

1. I feel relaxed even in unfamiliar situations.

2. I try to avoid situations which force me to be very sociable.

3. It is easy for me to relax when I am with strangers.

4. I do not have a particular desire to avoid people.

5. I often find social occasions upsetting.

6. I usually feel calm and comfortable at social occasions.

7. I am usually at ease when talking to someone of the opposite sex.

8. I try to avoid talking to people unless I know them well.

9. If the chance comes to meet new people, I often take it.

10. I often feel nervous or tense in casual get-togethers in which both sexes are present.

11. I am usually nervous with people unless I know them well.

12. I usually feel relaxed.

13. I often want to get away from people.

14. I usually feel uncomfortable when I am in a group of people I don't know.

15. I usually feel relaxed when I meet someone for the first time.

16. Being introduced to people makes me tense and nervous.

17. Even though a room is full of strangers, I may enter it anyway.

18. I would avoid walking up and joining a large group of people.

19. When my superiors want to talk with me, I talk willingly.

20. I often feel on edge when I am with a group of people.

21. I tend to withdraw from people.

22. I don’t mind talking to people at parties or social situations.

23. I am seldom at ease in a large group of people.

24. I often think up excuses in order to avoid social arrangements.

25. I sometimes take the responsibility for introducing people to each other.

26. I try to avoid formal social occasions.

27. I usually go to whatever social engagements I have.

28. I find it easy to relax with other people.

APPENDIX D
OXFORD HAPPINESS QUESTIONNAIRE (OHQ)

Please indicate how much you agree or disagree with the following statements. You will need to read the statements carefully because some are phrased positively and others negatively. Please give the answer that is true for you in general or most of the time.

1. I don't feel particularly pleased with the way I am.

2. I am intensely interested in other people.

3. I feel that life is very rewarding.

4. I have very warm feelings towards almost everyone.

5. I rarely wake up feeling rested.

6. I am not particularly optimistic about the future.

7. I find most things amusing.

8. I am always committed and involved.

9. Life is good.

10. I do not think that the world is a good place.

11. I laugh a lot.

12. I am well satisfied about everything in my life.

13. I don't think I look attractive.

14. There is a gap between what I would like to do and what I have done.

15. I am very happy.

16. I find beauty in some things.

17. I always have a cheerful effect on others.

18. I can fit in everything I want to.

19. I feel that I am not especially in control of my life.

20. I feel able to take anything on.

21. I feel fully mentally alert.

22. I often experience joy and elation.

23. I do not find it easy to make decisions.

24. I do not have a particular sense of meaning and purpose in my life.

25. I feel I have a great deal of energy.

26. I usually have a good influence on events.

27. I do not have fun with other people.

28. I don't feel particularly healthy.

29. I do not have particularly happy memories of the past.

LIST OF REFERENCES

American Psychological Association. (1992). Ethical principles of psychologists and code of conduct. *American Psychologist, 47*, 1597-1611.

American Psychiatric Association (1995). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: American Psychiatric Publishing, Inc.

Amichai-Hamburger, Y., & Furnham, A. (2007). The positive net. *Computers In Human Behavior, 23*, 1033-1045.

Anant, S. S. (1966). The need to belong. *Canada's Mental Health, 14*, 21-27.

Argyle, M. (1987). *The psychology of happiness*. London: Methuen.

Armstrong, L., Phillips, J.G., & Saling, L.L. (2000). Potential determinants of heavier internet usage. *International Journal of Human–Computer Studies, 53*, 537–550.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.

Baumeister, R., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*, 497-529.

Beard, K. W. (2005). Internet addiction: A review of current assessment techniques and potential assessment questions. *Cyberpsychology & Behavior, 8*(1), 7-14.

Beard, K. W., & Wolf, E. M. (2001). Modification in the proposed diagnostic criteria for Internet addiction. *Cyberpsychology and Behavior, 4*(3), 377–383.

Beck, A. T. (1993). Cognitive therapy: Past, present, and future. *Journal of Counseling and Clinical Psychology, 61*(2), 194-198.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck Depression Inventory* (2nd ed.). San Antonio, TX: The Psychological Corporation.

Block, J. J. (2008). Issues for DSM-V: Internet Addiction. *American Journal of Psychiatry, 165*(3), 306-307.

Bowerman, B. L., & O'Connell, R. T. (1990). *Linear statistical models: An applied approach* (2nd edition). Belmont, CA: Duxbury.

Bowlby, J. (1980). *Attachment and loss*. New York: Basic Books.

Boyd, D. M., & Ellison, N. B. (2007). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication*, *13*(1). Retrieved July 20, 2008, from http://jcmc.indiana.edu/vol13/issue1/boyd.ellison.html

Brenner, V. (1997). Parameters of Internet use, abuse and addiction: The first 90 days of the Internet usage survey. *Psychological Reports, 80*, 879–882.

Caplan, S. E. (2002). Problematic Internet use and psychosocial well-being: development of a theory-based cognitive-behavioral measure. *Computers in Human Behavior, 18*, 533–575.

Caplan, S. E. (2003). Preference for online social interaction: a theory of problematic Internet use and psychosocial well-being. *Communication Research*, *30*, 625–648.

Caplan, S. E., & High, A. C. (2006). Beyond excessive use: The interaction between cognitive and behavioral symptoms of problematic Internet use. *Communication Research Reports, 23*(4), 265-271.

Caplan, S. E. (2007). Relations among loneliness, social anxiety, and problematic Internet use. *Cyberpsychology & Behavior, 10*(2), 234-242.

Chak, K., & Leung, L. (2004). Shyness and locus of control as predictors of Internet addiction and Internet use. *CyberPsychology & Behavior, 7*(5), 559-570.

Chen, S. H., & Chou, C. (1999, August). *Development of Chinese Internet addiction scale in Taiwan*. Poster presented at the 107th American Psychology Annual convention, Boston, USA.

Choi, Y. H. (2007). *Advancement of IT and seriousness of youth Internet addiction*. International Symposium on the Counseling and Treatment of Youth Internet Addiction. Seoul, Korea.

Chou, C., Chou, J., & Tyan, N. N. (1999). An exploratory study of Internet addiction, usage and communication pleasure—The Taiwan's case. *International Journal of Educational Telecommunications, 5*(1), 47–64.

Chou, C., Condron, L., & Belland, J. C. (2005). A review of the research on Internet addiction. *Educational Psychology Review, 17*(4), 363-388.

Chou, C., & Hsiao, M. C. (2000). Internet addiction, usage, gratifications, and pleasure experience—The Taiwan college students' case. *Computers & Education, 35*(1), 65–80.

Cohen, J. (1977). *Statistical power analysis for the behavioral sciences* (revised edition). New York: Academic Press.

Cohen, S., & Hoberman, H.M. (1983). Positive events and social supports as buffers of life change stress. *Journal of Applied Social Psychology, 13*, 99-125.

Collins, N. L., & Miller, L. C. (1994). Self-disclosure and liking: A meta-analytic review. *Psychological Bulletin, 116,* 457– 475.

Connor, K. M., Davidson, J. R. T., Churchill, L. E., et al. (2000). Psychometric properties of the Social Phobia Inventory (SPIN): New self-rating scale. *British Journal of Psychiatry, 176*, 379-386.

Coopersmith, S. (1991). *Self-Esteem Inventories*. CA: Consulting Psychologists Press, Inc.

Cutrona, C., Russell, D., & Peplau, A. (1979). *Loneliness and the process of social adjustment: A longitudinal study*. Paper presented at the annual meeting of the American Psychological Association, New York, NY.

D'Amico, M. L. (1998). *Internet has become a necessity, U. S. poll shows*. Retrieved November 14, 2007, from www.cnn.com/TECH/computing/9812/07/neednet.idg/index.html

Davis, R. A. (2001). A cognitive-behavioral model of pathological Internet use. *Computers in Human Behavior, 17*, 187–195.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49,* 71-75.

Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The benefits of Facebook "friends:" Social capital and college students' use of online social network sites. *Journal of Computer-Mediated Communication*, *12*(4). Retrieved November 14, 2007, from http://jcmc.indiana.edu/vol12/issue4/ellison.html

Frazier, P. A., Mortensen, H., & Steward, J. (2005). Coping strategies as mediators of the relations among perceived control and distress in sexual assault survivors. *Journal of Counseling Psychology, 52*(3), 267-278.

Freedman, J. (1978). *Happy people: What happiness is, who has it, and why.* New York: Harcourt Brace Jovanovich.

Fritz, M. S., & MacKinnon, D. P. (2007). Required sample size to detect the mediated effect. *Psychological Science, 18*(3), 233-239.

Gambrill, E. (1996). Loneliness, social isolation and social anxiety. In M. A. Mattaini & B. A. Thyer (Eds.), *Finding solutions to social problems: Behavioral strategies for change* (pp. 345-371). Washington, DC: American Psychological Association.

George, A. (2006). Living online: The end of privacy? *New Scientist*, *2569*. Retrieved July 20, 2008, from http://www.newscientist.com/channel/tech/mg19125691.700-living-online-the-end-of-privacy.html

Goldsmith, R. E. (1986). Dimensionality of the Rosenberg Self-Esteem Scale. *Journal of Social Behavior & Personality, 1*(2), 253-264.

Greenfield, D. N. (1999). Psychological characteristics of compulsive Internet use: A preliminary analysis. Cyberpsychology & Behavior, 2(5), 403-412.

Griffiths, M.D. (1998). Internet addiction: Does it really exist? In J. Gackenbach (Ed.), *Psychology and the Internet: intrapersonal, interpersonal and transpersonal applications* (pp. 61–75). New York: Academic Press.

Griffiths, M. D. (2000). Does Internet and computer ‘‘addiction’’ exist? Some case study evidence. *Cyberpsychology & Behavior, 3*(2), 211–218.

Griffiths, M. D. (2003). Internet abuse in the workplace: Issues and concerns for employers and employment counselors. *Journal of Employment Counseling, 40*(2), 87-96.

Grinter, R. E., & Palen, L. (2002, November). *Instant messaging in teen life.* Paper presented at the 2002 Association for Computing Machinery Conference on Computer Supported Cooperative Work. Retrieved November 14, 2007, from http://doi.acm.org/10.1145/587078.587082

Gross, E. F. (2004). Adolescent Internet use: What we expect, what teens report. *Journal of Applied Developmental Psychology, 25,* 633– 649.

Hagerty, B. M., Lynch-Sauer, J., Patusky, K. L., Bouwsema, M., & Collier, P. (1992). Sense of belonging: A vital mental health concept. *Archives of Psychiatric Nursing, 6*, 172-177.

Hagerty, B. M., Williams, R. A., Coyne, J. C., & Early, M. R. (1996). Sense of belonging and indicators of social and psychological functioning. *Archives of Psychiatric Nursing, 4*, 235-244.

Hann, D., Winter, K., & Jacobsen, P. (1999). Measurement of depressive symptoms in cancer patients: Evaluation of the Center for Epidemiological Studies Depression Scale (CES-D). *Journal of Psychosomatic Research, 46*(5), 437-443.

Hempel, J. (2005, December 12). The MySpace generation. *BusinessWeek*. Retrieved November 14, 2007, from http://www.mywire.com/pubs/BusinessWeek/2005/12/12/1102930?page=1

Hills, P., & Argyle, M. (2002). The Oxford Happiness Questionnaire: a compact scale for the measurement of psychological well-being. *Personality and Individual Differences, 33*, 1073–1082.

Howe, N., & Strauss, W. (2000). *Millennials rising: The next great generation*. New York: Vintage.

Inderbitzen-Pisaruk, H., Clark, M. L., & Solano, C. H. (1992). Correlates of loneliness in midadolescence. *Journal of Youth and Adolescence, 21*(2), 151-167.

Jackson, T., Soderlind, A., & Weiss, K. E. (2000). *Social Behavior and Personality, 28*(5), 463-470.

Jones, W. H., Carpenter, B. N., & Quintana, D. (1985). Personality and interpersonal predictors of loneliness in two cultures. *Journal of Personality and Social Psychology, 48*, 1053-1511.

Jones, W. H., Freemon, J. E., & Goswick, R. A. (1981). The persistence of loneliness: Self and other determinants. *Journal of Personality, 49*(1), 27-48.

Kandell, J. J. (1998). Internet addiction on campus: the vulnerability of college students. *CyberPsychology & Behavior, 1*, 11–17.

Kiralla, L. V. (2005). *Internet addiction disorder: A descriptive study of college counselors in four-year institutions*. (Doctoral dissertation, University of La Verne, 2005). Retrieved November 14, 2007, from PsychInfo database.

Ko, C., Yen, J., Chen, C., Chen, S., & Yen, C. (2005). Proposed diagnostic criteria of Internet addiction for adolescents. *Journal of Nervous and Mental Disorders, 193*, 728-733.

Kraut, R., Patterson, M., Lundmark, V., 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.

Kraut, R., Kiesler, S., Boneva, B., Cummings, J., Helgeson, V. & Crawford, A. (2002). Internet paradox revisited. *Journal of Social Issues, 58*, 49–74.

La Greca, A. M., & Lopez, N. (1998). Social anxiety among adolescents: Linkages with peer relations and friendships. *Journal of Abnormal Child Psychology, 26*(2), 83-94.

Leary, M. R. (1990). Responses to social exclusion: Social anxiety, jealousy, loneliness, depression, and low self-esteem. *Journal of Social and Clinical Psychology, 9*, 221-229.

Leung, L. (2002). Loneliness, self-disclosure and ICQ ("I Seek You") use. *CyberPsychology & Behavior, 5,* 241–251.

Leung, L. (2004). Net-generation attributes and seductive properties of the Internet as predictors of online activities and Internet addiction. *Cyberpsychology & Behavior, 7*(3), 333-348.

Lin, S. S. J., & Tsai, C. C. (1999). *Internet Addiction among High Schoolers in Taiwan*. Poster presented at the 107th American Psychology Association (APA) Annual Convention, Boston, USA.

Marks, I. (1990). Non-chemical (behavioural) addictions. *British Journal of Addiction, 85*, 1389–1394.

Maslow, A. H. (1968). *Toward a psychology of being.* New York: Van Nostrand.

McKenna, K. Y. A., Greene, A. S., & Gleason, M. E. J. (2002). Relationship formation on the Internet: What's the big attraction? *Journal of Social Issues, 58*, 9–31.

McKenna, K. Y. A., & Bargh, J. (2000). Plan 9 from cyberspace: The implications of the Internet for personality and social psychology. *Personality and Social Psychology Review*, 4, 57-75.

Menard, S. (1995). Applied logistic regression analysis. *Quantitative Applications in the Social Sciences, 106*, 7-196.

Mitchell, P. (2000). Internet addiction: Genuine diagnosis or not? *The Lancet, 355*, 632–633.

Moore, D. (1995). *The emperor's virtual clothes: The naked truth about the Internet culture*. Chapel Hill, NC: Alogonquin.

Morahan-Martin, J., & Schumacher, P. (2000). Incidents and correlates of pathological Internet use among college students. *Computers in Human Behavior, 16*, 13–29.

Morahan-Martin, J., & Schumacher, P. (2003). Loneliness and social uses of the Internet. *Computers in Human Behavior, 19*, 659–671.

Nalwa, K., & Anand, A. P. (2003). Internet addiction in students: A cause of concern. *Cyberpsychology & Behavior, 6*(6), 653-656.

Niemz, 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 & Behavior, 8*(6), 562-570.

Owyang, J. (2008). *Social network stats: MySpace, Facebook, and Reunion*. Retrieved July 20, 2008, from http://www.web-strategist.com/blog/2008/01/09/social-network-stats-facebook-myspace-reunion-jan-2008/

Peter, J., Valkenburg, P. M., & Schouten, A. P. (2005). Developing a model of adolescent friendship formation on the Internet. *Cyberpsychology & Behavior, 8*(5), 423-429.

Pierce, G. R., Sarason, I. G., & Sarason, B. R. (1991). General and relationship-based perceptions of social support: Are two constructs better than one? *Journal of Personality and Social Psychology, 61*, 1028-1039.

Radloff, L. S. (1977). The Center for Epidemiologic Studies—Depression Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, *1*, 385-401.

Rice, K. G., Ashby, J. S., & Slaney, R. B. (1998). Self-esteem as a mediator between perfectionism and depression: A structural equations analysis. *Journal of Counseling Psychology, 45*(3), 304-314.

Rogers, Carl. (1959). A theory of therapy, personality and interpersonal relationships as developed in the client-centered framework. In S. Koch (Ed.), *Psychology: A study of a science. Vol. 3: Formulations of the person and the social context.* New York: McGraw Hill.

Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.

Russell, D. (1996). UCLA Loneliness Scale (Version 3): Reliability, validity, and factor structure. *Journal of Personality Assessment, 66*, 20–40.

Russell, D., Cutrona, C. E., Rose, J., & Yurko, K. (1984). Sound and emotional loneliness: An examination of Weiss's typology of loneliness. *Journal of Personality and Social Psychology, 46*, 1313-1321.

Russell, D., Peplau, L. A., & Cutrona, C. E. (1980). The revised UCLA loneliness scale: Concurrent and discriminant validity evidence. *Journal of Personality and Social Psychology, 39*, 472–480.

Scherer, K. (1997). College life on-line: healthy and unhealthy Internet use. *Journal of College Student Development,* 38, 655–665.

Schlenker, B. R., & Leary, M. R. (1982). Social anxiety and self-presentation: A conceptualization and model. *Psychological Bulletin, 92*, 641-669.

Shafer, A. B. (2006). Meta-analysis of the factor structures of four depression questionnaires: Beck, *CES-D*, Hamilton, and Zung. *Journal of Clinical Psychology, 62*(1), 123-146.

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 A□ective Disorders, 57*(1–3), 267–272.

Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. In S. Leinhardt (Ed.), *Sociological methodology* (pp. 290–312). Washington, D.C.: American Sociological Association.

Stephenson, W. (1988). *The play theory of mass communication*. New Brunswick, NJ: Transaction Books.

Suler, J. R. (1999). To get what you need: Healthy and pathological Internet use. *Cyberpsychology & Behavior, 2*(5), 355–393.

Tabachnick, B. G., & Fidell, L. S. (1996). *Using multivariate statistics* (3rd edition). New York: Harper & Row.

Tapscott, D. (1998). *Growing up digital: The rise of the Net Generation*. New York: McGraw-Hill.

Treuer, 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*, 283.

Valkenburg, P. M., & Peter, J. (2007). Preadolescents' and adolescents' online communication and their closeness to friends. *Developmental Psychology, 43*(2), 267-277.

Valkenburg, P. M., Peter, J., & Alexander, P. S. (2006). Friend networking sites and their relationship to adolescents' well-being and social self-esteem. *Cyberpsychology & Behavior, 9*(5), 584-590.

Vassar, M. (2008). A note on the score reliability for the Satisfaction With Life Scale: an RG study. *Social Indicators Research, 86*(1), 47-57.

Wan, C. S., & Chiou, W. B. (2006). Why are adolescents addicted to online gaming? An interview study in Taiwan. *Cyberpsychology & Behavior, 9*(6), 762-766.

Watson, J. C. (2005). Internet addiction diagnosis and assessment: Implications for counselors. *Journal of Professional Counseling: Practice, Theory & Research*, *33* (2), 17-30.

Watson, D., & Friend, R. (1969). Measurement of social-evaluative anxiety. *Journal of Consulting & Clinical Psychology, 33*, 448–457.

Weiss, R. S. (1974). *Loneliness: The experience of emotional and social isolation*. Cambridge, MA: MIT Press.

Widyanto, L., & Griffiths, M. (2006). 'Internet addiction': A critical review. International *Journal of Mental Health and Addiction, 4*, 31-51.

Yellowlees, P. M., & Marks, S. (2007). Problematic Internet use or Internet addiction? *Computers in Human Behavior, 23,* 1447–1453.

Yen, J., Ko, C., Yen, C., Wu, H., & Yang, M. (2007). The comorbid psychiatric symptoms of Internet addiction: Attention deficit and hyperactivity disorder (ADHD), depression, social phobia, and hostility. *Journal of Adolescent Health, 41*, 93-98.

Young, K. (1996a). Addictive use of the internet: A case that breaks the stereotype. *Psychological Reports, 79*, 899–902.

Young, K. S. (1998). Internet addiction: the emergence of a new clinical disorder. *Cyberpsychology & Behavior, 1*(3), 237–244.

Young, K. S. (1999). The research and controversy surrounding Internet addiction. *Cyberpsychology & Behavior, 2*(5), 381–383.

Young, K. S., & Rogers, R. C. (1998). The relationship between depression and Internet addiction. *Cyberpsychology & Behavior, 1*(1), 25–28.

Yu, S., & Yu, M. (2007). Comparison of Internet-based and paper-based questionnaires in Taiwan using multisample invariance approach. *Cyberpsychology & Behavior, 10*, 501-507.

BIOGRAPHICAL SKETCH

Andrea Spraggins attended Vanderbilt University in Nashville, TN, for her undergraduate degree, where she graduated *magna cum laude* with a double major in psychology and child development. She recently completed her coursework for her doctorate degree in counseling psychology at the University of Florida, and is currently on internship at the University of Houston Counseling & Psychological Center.