January 2012

College Women And Social Networking Sites: Reasons For Use And Related Mental Health Constructs

Jo Michelle Ellison

How does access to this work benefit you? Let us know!

Follow this and additional works at: https://commons.und.edu/theses

COLLEGE WOMEN AND SOCIAL NETWORKING SITES: REASONS FOR USE
AND RELATED MENTAL HEALTH CONSTRUCTS

by

Jo Michelle Ellison
Bachelor of Arts, Gustavus Adolphus College, 2007
Master of Arts, University of North Dakota, 2009

A Dissertation

Submitted to the Graduate Faculty

of the

University of North Dakota

In partial fulfillment of the requirements

for the degree of

Doctor of Philosophy

Grand Forks, North Dakota
August
2012

This dissertation, submitted by Jo Ellison in partial fulfillment of the requirements for the Degree of Doctor of Philosophy from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done, and is hereby approved.

_____
Joseph Miller, Ph.D.

_____
Alan King, Ph.D.

_____
Richard Wise, Ph.D., J.D.

_____
Heather Terrell, Ph.D.

_____
Timothy Pasch, Ph.D.

This dissertation is being submitted by the appointed advisory committee as having met all of the requirements of the Graduate School at the University of North Dakota and is hereby approved.

_____
Dean of the Graduate School, Wayne Swisher

_____
July 17th, 2012

Title   College women and Social Networking Sites: Reasons for use and related mental health constructs.

Department   Clinical Psychology

Degree   Doctor of Philosophy

Jo Ellison
July 17th, 2012

TABLE OF CONTENTS

vi

viii

ix

LIST OF FIGURES

Figure   Page

LIST OF TABLES

ACKNOWLEDGMENTS

To the Ellison, Taylor, Patton, Belisle, and Sanders Families

ABSTRACT

Existing research on use of social networking sites (SNSs) suggests that the hours of use

and the impact of use on mood is staggering, especially among the university population.

The present study builds off of an exploratory analysis of factors that influence

individuals' usage of SNSs. In the initial study female university students demonstrated a

clearer structure of such factors than did male university students. The present study

sought to replicate the factor structure of these influences on SNS use. Existing research

has explored little in terms of the relationship between personality factors and SNS use.

The extant literature is limited to the "Big Five" personality traits. Even fewer studies

look at mental health constructs such as depression and anxiety and their roles in

determining individuals' motivations for SNS use. The present study used both

confirmatory and exploratory factor analysis to look for trends in the data related to

factors influencing SNS use and personality and mental health construct variables found

on the Personality Assessment Inventory (PAI). Chi square analyses, ANOVAs, and

correlations were run to examine the relationships between a variety of variables related

to SNS use. Results indicated a successful replication of previous findings that female

university students use SNSs to: 1) maintain contact with others, 2) socially compare

themselves to others, 3) gather information about others, 4) regulate negative emotions,

and 5) avoid "real-life" social discomfort. Additionally, a number of interesting

relationships were found between demographic variables, characteristics of

SNS use, outcomes of pathological SNS use, factors influencing SNS use, and personality/mental health construct variables.

CHAPTER I

INTRODUCTION

Internet Use

The internet has become ubiquitous in Western culture, providing billions of

people with services and entertainment that are either completely new or that were

previously provided to the public in a different format. As of December 2009, nearly two

billion individuals (27.11% the world's population) is estimated to have used the internet,

which represents a near four-fold increase since 2000 (The World Bank, 2012). During

2009, 76.2% of the North American population had used the internet, which represents an

increase of 140% from 2000 to 2009. Proportionately, North Americans account for only

14.4% of the world's internet users with Asians and Europeans leading the world in the

total number of internet users (more than 700 million and 400 million users,

respectively). The geographic regions with the largest growth in internet users are Africa

and the Middle East with 1,809.8% and 1,675.1% increases from 2000 to 2009,

respectively (Miniwatts Marketing Group, 2010).

According to data collected from 1990 to 2009 by the World Bank, internet use

can function as an indicator of development (See Figure 1). Industrialized nations have

the highest proportion of population internet use; for example, the 2009 internet usage

rates for the United States and Japan were 78.1% and 77.2%, respectively. Third-world

countries have the lowest rates of internet use; for example, the 2009 internet usage rates

for India and Sudan were 5.3% and 9.9%, respectively. Nations that are in the process of

1

becoming more developed have usage rates approximating the global average (27.11%);

for example, 2009 internet usage rates for China and Mexico were 28.8% and 25.4%,

respectively (The World Bank, 2012).
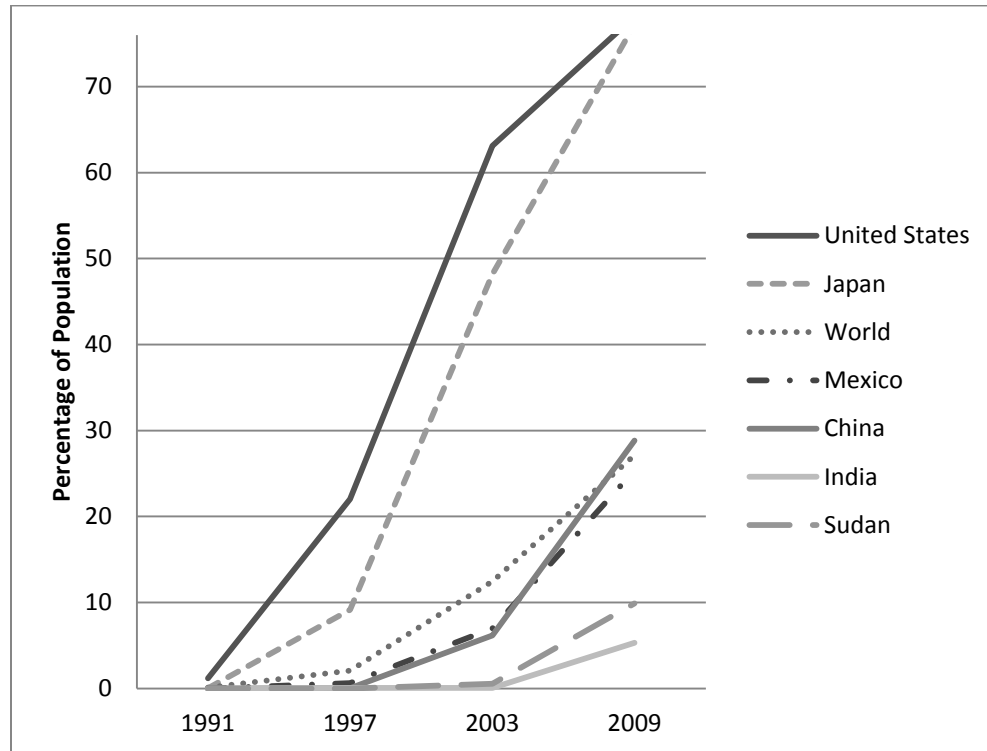
Figure 1. Internet Users as Percentage of Population

Social Networking Sites

As the internet grew exponentially during the late 1990s and early 2000s, the

ways in which individuals used the internet began to change as well. During the first few

years of the 21st century online communities and "social networking sites" (SNSs) were

created. Ten years later, there are many different SNS options, reaching consumers

around the world.

The most recent Nielsen survey of internet use (August 2010) found that 22.7% of

all reported internet use was spent on SNSs and blogging sites. This rate represents a

43% increase in the proportion of time spent on such sites among internet users since the

2

2009 survey (The Nielsen Wire, 2010). Even more astounding was the 300% increase in the number of individuals that reported using SNSs from 2008 to 2009 (The Nielsen Company, 2009). The Nielsen Company also surveyed what types of online activities Americans engaged in while using their mobile devices. In 2010 SNSs represented 10.5% of American's mobile internet usage, an increase of 28% from 2009 (The Nielsen Wire, 2010). As mobile technology increases and the price of smartphones decreases, these usage numbers will continue to increase. The Nielsen Company's findings suggest an increase in the use of the internet as an outlet for social communication by Americans.

Among the most widely popular of these SNS sites is Facebook. As of January of 2012, Facebook boasts over 800 million active members; active members are defined as individuals that have an account with Facebook and have logged onto the site within the past thirty days (Facebook, 2012). The membership has grown dramatically within its eight years of operation. In August of 2010, Facebook reported 500 million users, which represented a five-fold increase from the 100 million active members in August of 2009, which also represented an increase from the 20 million active members in April of 2007 (See Figure 2) (Facebook, 2010). Facebook is a world-wide phenomenon with approximately 80% of its membership coming from countries other than the United States. Moreover, the site has been translated into 70 different languages, not by paid consultants, but rather by 300,000 of the site's members (Facebook, 2012). This present study will focus on Facebook given its large number of active members and its significant presence in the existing research literature, compared to alternative SNSs.
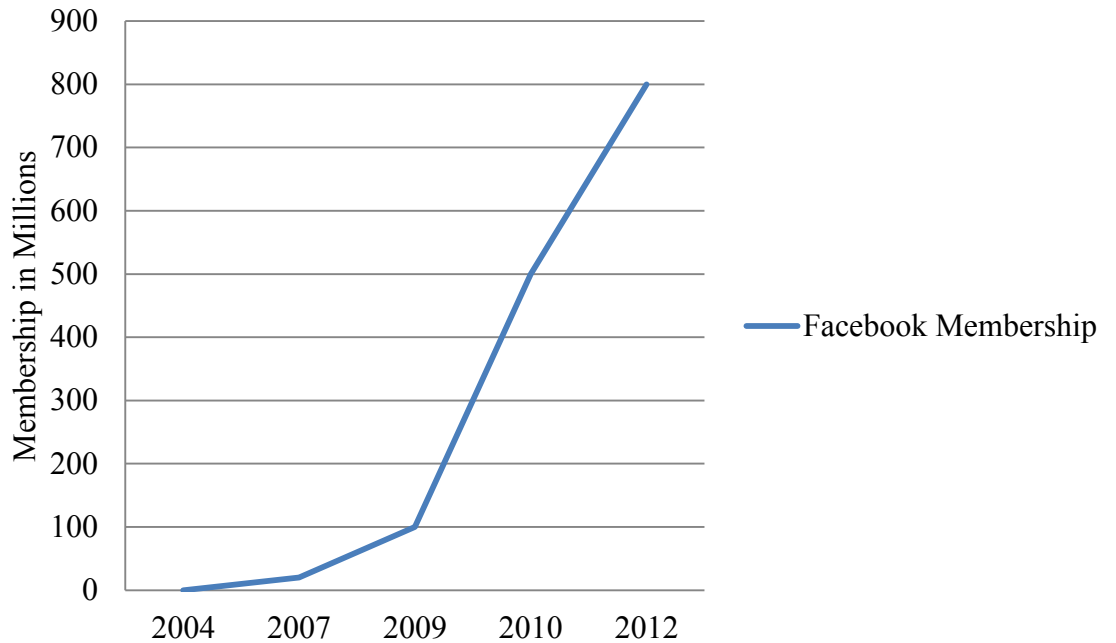
Figure 2. Facebook Membership

Facebook offers a wide variety of opportunities to its members. A brief summary of the site's composition is given here. Facebook offers the user an account page where they can place or "post" information about themselves. Information fields are provided to post specific facts about where one lives, contact information, education, work, and interests. These personal account pages are called "profiles." Additionally, pictures help to identify users, with one photo assigned as a picture that identifies the individual ("profile picture") and other pictures that can be posted in "albums." An individual can become a "friend" to other Facebook members, allowing the "friends" mutual access to one another's profiles. Friends are often found through searches of names, common interests, educational institutions, and workplaces. Universities as well as some larger corporations have networks within Facebook that allows individuals to stipulate different levels of privacy, for instance allowing fellow university students or colleagues access to their page without first becoming friends. The site also provides information about what

each user has recently been doing within the social networking site (a "news feed"), such as with whom he or she has become friends, comments he or she recently posted, new photographs posted, or information from his or her profile that has recently changed. Users can change their "status," which is accomplished by uploading any statement, picture, link, etc. onto their profile. Information about an individual's recent activity on the site, (e.g., his or her status) is delineated on a time-line which logs all past posts on the site.

Facebook is not merely a passive, information-posting site; there are many ways to communicate directly to other Facebook members. Private messages, those that cannot be viewed by other users or friends, can be sent between users. Alternatively, individuals can post directly on other users' profiles, called a "wall," making those messages public. These messages can comment on someone else's post or can be a new submission. Individuals can also chat in real time with other friends who are logged onto the site. Facebook offers event planning, allowing users to invite friends to different types of events. The site also allows for the creation of groups that users can join or people/places/things that individuals can "like" in order to advertise their support of a cause or display certain values. Facebook has a myriad of "applications" that allow users to creatively connect with others (e.g., playing games, taking quizzes, giving virtual gifts, etc.). New features are often being added to these SNSs that parallel other advancements in technology, such as GPS locators built into mobile phones. Now Facebook members can let others know where they are at any given moment by enabling participating locations and businesses to post on their walls when they have stepped into that business or particular tourist attraction.

Users versus Non-Users

Only one study was found that addressed differences between users and non-users. Likely, this lack of available research is due to the difficulty in recruiting a large, diverse sample of adult subjects that do not have such accounts. The existing study compared adult Australian users of Facebook to adult Australians that did not have SNS accounts. Results indicated that Facebook users are more likely to have higher traits of extraversion, narcissism, exhibitionism, and leadership. Non-users were more likely to have higher scores on the traits of conscientiousness and shyness. Facebook users demonstrated higher ratings of loneliness related to their family relationships. Non-users had higher ratings of loneliness related to a broad spectrum of social outlets. Within the group of Facebook users, extraverts were more likely to access the site than were introverts (Ryan & Xenos, 2011).

Social Networking Site Use Statistics

Few studies of social networking sites were found that used non-university, adult samples; thus college students will be the focus of the majority of the literature presented here. Additionally, for the present study and the degree of use of SNSs among college students, a university sample allows generalization to college students, which is the aim of the present study.

Online social networking sites are especially popular among college students. In fact, Facebook was first created in 2004 at Harvard as a way to identify individuals in different residence halls. The story of the company's rise was chronicled in the Oscar-winning 2010 movie *The Social Network*. Rather than inventing the idea of online social networking, the company was able to integrate popular aspects of existing networking

6

principles in a simple, easy-to-use format (Klein, 2010). Facebook moved beyond college students by adding high school networks in September 2005, international school networks in October 2005, and eventually expanded to corporations and to the general public (Facebook, 2010).

Due to the popularity of SNSs (especially Facebook) among college students, the majority of research studies on social networking have used college samples. Relatively consistent reports of the percentages of college students with Facebook accounts were found across the reviewed literature. A majority of college students have Facebook or other SNS accounts (with more members of Facebook than other sites), usually ranging from 85% to 94% (Ellison, Steinfield, & Lampe, 2007; Raacke & Bonds-Raacke, 2008; Ross, Orr, Sisic, Arseneault, Simmering, & Orr, 2009). One study found that a majority of SNS users had more than one SNS account (Raacke & Bonds-Raacke, 2008). A longitudinal study that followed college students from 2006 to 2007 found that the sample doubled its time spent on Facebook over the course of the year. Additionally, the sample saw an average 50% increase in the number of friends (Steinfield, Ellison, & Lampe, 2008).

In comparing first-year college students' use of Facebook to that of upper-class students, first-year students spent significantly more time on Facebook, while junior- and senior-level students had significantly more Facebook friends. First-year students reported having a stronger emotional connection to Facebook than upper-class students, and there was a negative correlation among first-year students that had more Facebook friends and their emotional and academic adjustment to college. On the other hand, upper-class students with more Facebook friends showed greater social adjustment to

college and more attachment to their institution. Upper-class students reporting more social connection to Facebook showed greater emotional and over-all adjustment to college while those with greater emotional (as opposed to social) connection to Facebook had lower levels of self-esteem. Thus, it appears that use of Facebook changes over the course of college, as do the factors that influence use (Kalpidou, Costin, & Morris, 2011).

Survey and diary research indicate that undergraduate students access their online social networking account and browse the site for an average of 10-60 minutes each day (Ellison et al., 2007; Pempek, Yermolayeva, & Calvert, 2009; Ross et al., 2009). Given the large amount of time spent on such sites by college students in the United States, the importance of gathering information about the impact and role of such sites among this population cannot be overstated.

A large amount of time is spent on SNSs. Debatin, Lovejoy, Horn, and Hughes (2009) found that a total of 85% of surveyed Facebook members logged into their accounts at least once daily. Of that 85%, 37% percent logged in once daily, 25% logged in three times daily, and 23% logged in five times daily. Approximately half of the surveyed individuals reported that the average amount of time they spent on Facebook during a given log-in session was 15 minutes, 20% reported an average of 5 minutes, and another 20% reported an average of 30 minutes. Daily Facebook users described the site as an "important" or "very important" part of their everyday lives (Debatin, et al., 2009). A similar survey of college student Facebook users found an average of four, daily log-ins. These Facebook users reported spending an average of 1.46 hours each day on activities relating to their own profiles and 1.10 hours each day looking at content found

on others' accounts (Raacke & Bonds-Raacke, 2008). Another survey of college students' Facebook use found that 79% of the sample accessed their accounts for anywhere from 10 to 60 minutes on an average day (Ross et al., 2009).

Facebook itself tracks many different statistics related to the use of the site. The company reports that its active members spend an accumulated total of five billion minutes each month on the site, in other words roughly 3,500,000 days or 9,500 years (Facebook, 2010). Facebook also reports that 50% (400 million) of its members use the site on any given day. Approximately 350,000,000 Facebook members access the site via mobile devices (Facebook, 2012). There are more people accessing Facebook daily via mobile devices than there are people in the United States, and the accumulated amount of time that these individuals spend on mobile phone Facebook applications everyday would make up more than 127 average lifetimes (United States Census Bureau, 2012; Facebook, 2012).

During this large amount of time being spent on SNSs individuals are becoming highly connected with others. According to Facebook's own statistics, the average active Facebook member has approximately 130 Facebook friends, belongs to 80 Facebook communities/groups/events, and posts an average of 70 content items each month. Facebook reports that over 250 million photos are uploaded daily (Facebook, 2010; Facebook, 2012). In the Debatin et al. (2009) survey of adult Facebook users, it was found that 38% had over 300 friends, 24% had 200 to 300 friends, and 18% had 100 to 200 friends. In a recent survey of 800 college students, the majority of the sampled Facebook users reported having between 150 and 200 friends (Ellison, et al., 2007).

9

Female use. Few existing studies examine only female Facebook users and only a few articles have been published that indicate significant differences in Facebook use between men and women. In a study of broad internet use, it was found that women with high levels of neuroticism and loneliness are drawn to using the internet, with higher levels of neuroticism leading to greater use of the internet specifically for social purposes (Amichai-Hamburger & Ben-Artzi, 2003; Hamburger & Ben-Artzi, 2000). A negative correlation was found between use of the internet for social purposes and the trait of extraversion (Hamburger & Ben-Artzi, 2000). Women were found to spend more time on Facebook compared to men, though they visited their own page less frequently than men. Additionally, women had more friends, posted more photos, and posted more items about themselves than did men (Moore & McElroy, 2012). Women were found to use their main Facebook photos for self-promotion purposes significantly more than men (Mehdizadeh, 2010). Overall, the existing literature suggested that women use SNSs to be social, as outlets for communication with others. Women appeared to be less concerned with their own profile page, aside from its level of attractiveness to others, and tended to be more focused on what others were doing.

Pathological use. Given the large amount of daily Facebook use, how can we tell when use becomes pathological? Internet, online gaming, and SNS use, per se, are not currently in the *Diagnostic and Statistical Manual, 4th Edition, Text Revision* (DSM-IV-TR) as definable pathological activities. Thus, relating such behaviors to impulse control, abuse, or dependency is difficult (American Psychiatric Association, 2000). The best method for measuring pathology of use, given the current evolution of online social media in our culture, is likely through the examination of functional impairment. Students

that report significant online media use often also report negative consequences in educational, occupational, and social activities as a result of their SNS use. Continuing to use SNSs at a level that results in negative consequences may suggest both impulse control problems and addictive-like behavior (Ellison, 2009). There is literature to suggest that a growing subset of the American population is experiencing pathological use of internet and online interactive media, in that it interferes with and causes negative consequences in their academic, career, and social functioning. Thus the substance abuse/dependence criteria in the DSM-IV-TR (American Psychiatric Association, 2000) can be altered to apply to SNS behaviors. This modification of the diagnostic criteria was useful to the present study. However, the extant research on "addiction" to SNSs is difficult to integrate, as studies have used different criteria for pathological use. In a survey that assessed for pathological internet use by using modified substance abuse/dependence criteria (e.g., subsequent work/academic/interpersonal problems, distress, tolerance symptoms, and mood-altering use), undergraduate students were categorized into groups with no symptoms, limited symptoms, and pathological symptoms. More than half of the students surveyed had limited symptoms (64.7%), 27.2% had no symptoms, and 8.1% were placed in the pathological category (Morahan-Martin & Schumacher, 2000). Additionally, some online media addiction research has looked at the relationship between addictive social media use and personality traits. College students identified as pathological internet users were found to score significantly higher than nonpathological users on a measure of loneliness and were more likely to be socially uninhibited in their online behavior (Morahan-Martin & Schumacher, 2000).

Reasons for Use

Mark Zuckerberg, the CEO of Facebook, defines the purpose of Facebook as allowing "people to communicate more efficiently with their friends, families, and coworkers" (Facebook, 2010). Zuckerberg has declared that the company wants to "connect people and then empower them to share what they want" (Facebook, 2010). Few studies have looked into the factors influence SNS use. Findings from a recent qualitative interview study of undergraduate SNS users suggest that students use SNSs to explore their identities. The researchers further assert that the virtual quality of both the content displays and the social communication provides a safe place for students to experiment with aspects of their identities, which are affirmed or rejected through the feedback of friends and other site members (Manago, Graham, Greenfield, & Salimkan, 2008). While users may be exploring their identities, a study of Facebook users that spanned multiple countries found that profiles are accurate portrayals of users. The study compared users' personality profiles and the impressions of unacquainted observers upon examining the individuals' profiles. While most personalities were accurately categorized by observers, extraverts showed more congruency between their online and real-life interactions as compared to people with neuroses (Back et al., 2010).

Multiple studies have found 80% to 90% of individuals with Facebook accounts indicate using the sites for the intended purpose of connecting with "real-life," current friends (Debatin, Lovejoy, Horn, & Hughes, 2009; Ellison, Steinfield, & Lampe, 2007; Raacke & Bonds-Raacke, 2008). Additionally, a recent study suggests that the primary use of SNSs is to "friend" others with whom they expect to create or maintain existing friendships offline. Additionally, it was found that much of the online communication is

done with friends with whom the user has an existing offline relationship (Pempek et al., 2009). In the Debatin et al. (2009) study of adult Facebook users, different types of "friending" strategies were assessed. Ten percent of the sample reported accepting "anyone" as a friend, 37% reported friending people they have heard about from others, and 52% only friending those that they personally know offline (Debatin et al., 2009). In a study that compared the use of Facebook by high school students with that of non-college-student adults the adolescent students were found to spend significantly more time using Facebook each day and they engaged in more friend-collecting behavior. Adolescent students also were more likely than adult users to rate having more Facebook friends as important (Christofides, Muise, & Desmarais, 2012).

One study found that a slight majority of Facebook users reported a preference for using the site to look at content posted by others; such a finding might imply that a large percentage of users are less interested in the bidirectional communication offered by the sites, preferring to primarily collect information about others (Raacke & Bonds-Raacke, 2008). Furthermore, a daily-diary study of college students' Facebook use found that the majority of that population's time was spent looking at others' posted information. Moreover, the information posted by the individual was usually meant to be viewed by many friends at once, suggesting that a major draw of Facebook is the potential for mass communication rather than more private or intimate communication (Pempek et al., 2009). An additional study suggests that some users may use the site to seek social support. Individuals who posted about depressive symptoms and received online reinforcement from online friends are more likely to discuss their depressive symptoms publically on Facebook (Moreno et al., 2011). Thus, the research suggests the appeal of

SNSs likely is rooted in preference for mass communication with existing friends and with potential new friends.

Most of the existing research examines individuals' use of SNS applications and friending strategies as discussed above. Only one study was found that focused on broad factors influencing individuals' use of Facebook; the authors postulated five broad factors that would lead individuals to use Facebook based on theory. These factors included social enhancement, entertainment value, maintaining interpersonal connectivity, self-discovery, and purposive value. Three of those factors were endorsed by their sample as significant predictors of use: social enhancement, maintaining interpersonal connectivity, and entertainment value (Cheung, Chiu, & Lee, 2011). A factor analytic study examining the relationship between use of Facebook and the Big Five personality traits (McCrea & Costa, 1997) found a two-factor solution: one group that used based on "attitudes/satisfaction" and another that used for "online sociability" (Ross et al., 2009). The "attitudes/satisfaction" factor had high loadings from items indicating pride in the individual's use of Facebook, the perceived influence of their use on their mood and relationships, and overall satisfaction with the website and its ability to provide the individual with a service. The "online sociability" factor had high loadings from items suggesting frequent communication with others via different methods available on Facebook as well as use of Facebook in a variety of situations (e.g., at work or school) (Ross, et al., 2009).

Privacy

Despite the seemingly controlled environment of SNSs in which people communicate most frequently with those they know outside of the virtual community,

users often allow strangers to access their posted information. In a study of undergraduate students, approximately 87% of the sample posted personal information (e.g., personal phone number, address, etc.) on their SNS account and about 13% of the sample posted class schedules. Just over half of the sample (51.5%) endorsed using privacy settings that require some degree of greater connection in order to access the individual's personal information (Raacke & Bonds-Raacke, 2008). In a survey of adult Facebook users, 91% reported familiarity with privacy settings; however, only 77% of these users were actively using the privacy settings available. Of that 91% using privacy settings, 47% reported using such settings because they are "generally cautious," while another 38% indicated using the settings due to "concerning stories" (Debatin et al., 2009). Findings from in-depth, open-ended interviews with 16 teenagers suggest that the most potentially dangerous information disclosure occurred among those adolescents who used SNS profiles for identity exploration and creation, as well as among those less internet-savvy adolescents (Livingstone, 2008).

Research suggests that users may be inadvertently allowing strangers to access their personal information by neglecting safety and privacy settings, due to lack of insight into who could be viewing their information. A study of college-aged SNS users found a high rate of self-disclosure on Facebook, without awareness of the potential creation of jealousy in their romantic partners (Muise, Christofides, & Desmarais, 2009). Massachusetts high schools, among others across the nation, are monitoring students' SNS accounts and other online media sites like YouTube in order to ensure that student athletes are not breaking school bans on alcohol and drug use. Schools warn students to be cautious of what they publish on SNSs and inform students that they could be

punished for photos and other information found that implicate them in the violation of school codes of conduct. Many principals reported beginning searches of SNS content only upon receiving police tips about possible student violations. One principal stated "if the kids are foolish enough to post a photograph, or someone posts a photograph that they're in, most principals would take some sort of action." Despite the warnings, many students have been suspended from athletic teams since the schools began this tactic (Sacchetti, 2007). Another study of adolescent students found that these students were also more likely than adults to disclose personal information on their profiles (Christofides et al., 2012).

Personality and Use

The extant research examining the relationship between SNS use and personality is largely limited to the Big Five personality factors of openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism (McCrea & Costa, 1997). The analyses in these studies are generally limited to correlations and the personality traits measured are relatively limited in their clinical utility.

The most commonly researched of the Big Five personality traits is the extraversion/introversion polarity. Researchers in the Netherlands found that extraversion was positively correlated with social internet use among both men and women (Correa, Hinsely, & de Zúñiga, 2010). One study found a significant, positive correlation between extraversion and the number of group memberships on Facebook. However, in this study no significant relationship was found between extraversion and the number of friends on Facebook, time spent online, or how frequently the individual changed his or her status (Ross et al., 2009). Moore & McElroy (2012) contradicted the Ross et al. (2009) study in

that they found a positive relationship between extraversion and the number of Facebook friends. Counterintuitively, these researchers also found that individuals high in trait extraversion use Facebook less frequently than those low in trait extraversion (Moore & McElroy, 2012). In a study of members of a SNS exclusive to German students, extraverted members presented themselves in a "less restrained manner," measured by the judged conservativeness of their personal photo. Thus, extraverted individuals tended to have less conservative photos of themselves publicly posted on their accounts (Krämer & Winter, 2008). Adding to this idea of a less restrained presentation, it was found that those higher in extraversion expressed significantly less regret over the content of their postings compared to those low in extraversion (Moore & McElroy, 2012).

The related concept of shyness was found to positively correlate with the amount of time spent on Facebook and the individual's favorable view of the site in general. However, there was a significant negative correlation between shyness and the number of Facebook friends (Orr, Sisic, Ross, Simmering, Arseneault, & Orr, 2009).

Other traits of the Big Five have been found to correlate with different aspects of SNS use. Openness to experience was found to positively correlate with social internet use (Correa et al., 2010). Ross et al. (2009) found that higher levels of openness to experience predicted higher levels of online social behaviors. On the other hand, low levels of openness to experience were found to predict higher levels of knowledge about computers and online technology (Ross et al., 2009).

The neuroticism/emotional stability polarity has been found to correlate with different factors of SNS use. Individuals scoring high in neuroticism were found to use Facebook more frequently than those high in emotional stability (Moore & McElroy,

2012). Neuroticism was not related to the amount of information posted by an individual, though neuroticism levels were related to the individuals' preferred method of communication. Individuals high in neuroticism preferred to use the Facebook "wall" (public, mass-communication via own or others' account profiles), whereas those lower on neuroticism preferred to post pictures on their profiles (Ross et al., 2009). Additionally, among men there was a positive correlation between emotionally instability (high levels of neuroticism) and overall levels of SNS use, significantly more than in males low in neuroticism (Correa et al., 2010). Individuals high in neuroticism were also found to be more likely to use Facebook for social reasons (Hughes, Rowe, Batey, & Lee, 2012).

Few significant correlations were found between the agreeableness and conscientiousness Big Five factors and SNS use. When looking at communication through posting of information, the two factors were found to correlate with potential for regret: agreeableness positively correlated with regret about potentially inappropriate posted content; conscientiousness was negatively correlated with the number of wall postings about self or others and positively correlated with regret about postings (Moore & McElroy, 2012).

Few studies have examined clinical personality traits or clinical symptomology (e.g., depressive or anxiety symptoms). Additionally, individuals viewing strangers' profile pages were able to correctly identify those individuals with narcissistic traits and obtaining knowledge of the amount of social interaction in which the individual engaged on the site and after viewing the individual's self-portrait photograph ("profile picture") (Buffardi & Campbell, 2008). A positive correlation was found between narcissistic traits

and the number of times an individual checked Facebook daily and the amount of time the individual spent on Facebook during each log-in. Those high in narcissistic traits were more likely to engage in self-promotion via their main photo, other posted photos, status updates, and notes (Mehdizadeh, 2010). One study found that narcissistic personality traits predicted greater social activity and self-promotion on SNSs (Buffardi & Campbell, 2008).

Research on non-clinical, high self-esteem levels has not fully replicated the narcissism findings of Buffardi and Campbell (2008). A study of 58 users of an exclusive European student SNS examined the individual differences in online self-presentation. The researchers found no significant relationships between self-presentation style and self-esteem levels of users. However, the researchers did find a positive relationship between reported self-efficacy levels and online impression management factors, such that individuals with high self-efficacy filled out significantly more information fields and did so using more words than those with lower self-efficacy ratings. The researchers labeled the self-presentation of those with high self-efficacy as "more elaborate and riskier" (Krämer & Winter, 2008).

In contrast, among college students there was a negative correlation between the amount of time spent on Facebook and self-esteem. A negative correlation was also found between the number of friends and the individual's academic adjustment to college (Kalpidou, Costin, & Morris, 2011). These somewhat conflicting findings may suggest that the diversity among narcissists may have resulted in increased variability in data, comparing those with true high self-esteem with those with fragile self-esteem that are defending against rejection. Gonzales and Hancock (2011) found that individuals that

accessed their Facebook profiles while in a lab showed significant increases in levels of self-esteem during the experiment. These self-esteem increases were even greater among those that altered their profile in some way by adding, subtracting, or changing some content item (Gonzales & Hancock, 2011).

Another study (Mittal, Tessner, & Walker, 2007) addressed the relationship between clinically significant personality traits and SNS use; examining Schizotypal Personality Disorder (SPD) traits. The researchers found that adolescents diagnosed with SPD were significantly more likely to use the internet for social reasons. Moreover, these individuals were more interactive with online friends than they were with "real-life" friends. The severity of SPD symptoms and Beck Depression Inventory (BDI) scores were positively correlated with many different types of social internet use. The findings suggest that internet use may provide a social outlet for socially isolated teenagers with SPD and/or depressive symptoms (Mittal et al., 2007).

Several studies were found that addressed individuals' use of Facebook and depressive symptoms. A study of adolescents found that depressive symptoms reported on the BDI were positively correlated with use of the internet for social purposes, such as social networking (Mittal et al., 2007). In a study of more specific features of SNS use, it was found that the severity of depressive symptoms reported by 13- and 14-year-old SNS users predicted the posting of inappropriate pictures (defined as showing behavior that may be deemed inappropriate by an authority figure and agreed upon by multiple independent raters) (Mikami, Szwedo, Allen, Evans, & Hare, 2010). As a potential proxy for anxiety or ruminative symptoms, "high need for cognition" was found to predict use of Facebook for information-gathering purposes (Hughes, Rowe, Batey, & Lee, 2012).

The relationship between personality and SNS use was found to exist across cultures, though it is hypothesized that some differences are present between individualistic and collectivistic cultures in their use of SNSs. In a study of American and German college students, researchers found that individuals in both countries that scored highly on agreeableness, emotional stability, and conscientiousness were less likely to post "problematic content." "Problematic content" was operationally defined as photos of the self that were in the nude, included sexual props/firearms, or depicted drug or alcohol use along with posted comments that mentioned engaging in sexual, drug, or alcohol behaviors. Individuals that scored highly on a measure of compulsive internet use were more likely to engage in these Facebook-posting faux pas. Individuals that engaged in these types of postings were younger, suggesting a possible component of maturity. American students were more likely to engage in these behaviors than German students. Researchers hypothesized that this was likely due to Americans' tendency to be more individualistic and less concerned about adhering to specific rules and expectations. The larger population of the United States was also hypothesized to provide greater anonymity to American students (Karl, Peluchette, & Schlaegel, 2010).

Personality and differential use of social networking site features. Different characteristics of SNS users have been found to relate to what types of activities/behaviors the individuals engage in while on such sites. As described above, Facebook users high in extraversion were shown to prefer the use of "wall" and "chat" functions of Facebook. Individuals who were high in trait neuroticism preferred the "wall" feature more than others, suggesting a preference for forms of online communication that are public and not instantaneous. A positive correlation was also

found between levels of exhibitionism and use of status updates and posting of photos (Ryan & Xenos, 2011). Rosenberg & Egbert (2011) looked at how use differed among individuals with other-focused versus self-focused traits. Individuals scoring highly on personality traits that are other-focused (affiliative and self-monitoring) were more likely to use self-presentation methods on Facebook that elicit positive affect from others and that promote the goals of interpersonal interaction. Individuals that score highly on self-focused traits (Machiavellian) were more likely to self-promote and provide damage control as necessary (Rosenberg & Egbert, 2011). Extraverts have been found to use Facebook for socialization, placing importance on maintaining an up-to-date online presence. This online presence was shown to leave a "behavioral residue" from which unacquainted observers were able to give relatively accurate information about the individual's personality traits based on viewing the profile. The traits of conscientiousness and openness were not as observable. Individuals high in agreeableness were more likely to view all different types of pages. Individuals low in conscientiousness spent significantly more time using Facebook and viewing pages than those high in conscientiousness, likely due to a difference in use of Facebook for procrastination. Individuals high in openness were more likely to post photos of themselves (Gosling, Augustine, Vazire, Holtzman, & Gaddis, 2011).

Personality and Pathological Use

While no research studies were found on "addiction" to Facebook, a body of literature exists on the use and over-use of the internet and online gaming, which are other forms of online social and entertainment media. Correlational research has demonstrated some relationships between internet and gaming addictions, personality

styles, and behavioral trends. Chak and Leung (2004), in a sample that contained mostly adolescents and young adults (78% were from 12 to 26 years old), found a positive relationship between the tendency toward internet addiction and the users' traits, beliefs, and behaviors. Internet addiction tendency correlated with shyness, the role of chance perceived in the individual's life, belief in the irresistible power of others, length of session of use, intensity and frequency of use in days per week, and the use of email, chatting applications, and online games. The investigators found a negative correlation between internet addiction and the amount of religious faith that individuals reported. Full-time students were also found to be more likely to become addicted to the internet (Chak & Leung, 2004).

Purpose of the Study

This research project is designed to address two gaps in the existing literature on SNS use. The areas of research needing attention are related to reasons for use and clinically-relevant personality characteristics of users. The potential reasons for using SNSs have not been previously researched and pertinent studies are mostly limited to identifying specific activities that an individual may engage in while on his or her account. By identifying more specific social and personal reasons for logging on to the site, and by collecting information on allocation of time engaging in various active or passive activities, information will be collected pertinent to identifying the broad and salient reasons for individuals' use of SNSs. Additionally, the present study investigates clinically relevant personality traits and symptomology that may be helpful to clinicians who are increasingly likely to serve clients who spend appreciable time on SNS as a part of their collegiate or other social interactions.

This study builds directly on two different research projects conducted and co-conducted by the researcher. The first study was a master's thesis project that collected information about use of SNSs among male and female college students. Non-clinical personality styles were assessed in the study through use of the Millon Inventory of Personality Styles, Revised (MIPS-R). The measure was designed to be used with non-clinical populations and it is strongly related to Theodore Millon's personality theory (Millon, 2004). Millon's theory explains behavior patterns and personality styles based on three polarities: active versus passive, self versus other, and pleasure versus pain (Jankowski, 2002, p.4; Millon & Davis, 1996). Through combinations of these polarities distinctive patterns of cognition, affect, and behavior, otherwise known as personality, emerge. These three polarities were assessed by the MIPS-R, as well as eight other thinking and behaving polarities. Consistency measures allowed the researcher to exclude those individuals from the data analysis who did not accurately or adequately complete the personality measure.

Differences in personality style were found when comparing regular users of SNSs (individuals reporting any amount of use of such sites during an "average week") to non-users. Regular users of both genders were more likely to endorse the presence of externally-focused and gregarious/outgoing personality styles. Regular users of both genders were less likely to endorse the presence of internally-focused and asocial/withdrawing personality styles. Thus, the general personality trends for SNS users suggest extraversion, focus on others, and enjoyment of social interaction, all of which fits with anecdotal characteristics associated with individuals interested in social networking activities both on and off the internet (Ellison, 2009). These findings are also

consistent with much of the existing literature, suggesting that extraversion is highly correlated with SNS use (Correa et al., 2010; Hughes et al., 2012; Moore & McElroy, 2012; Ross et al., 2009). Additionally, non-users of SNSs (individuals reporting no use during an average week) were significantly less likely to endorse MIPS-R items loading innovation-seeking and thought-guided personality styles. Such styles are suggestive of both creativity and the use of logic and reasoning for problem solving. Thus, non-users may be less likely to "think outside the box" and less likely to emphasize logic and objectivity (Ellison, 2009).

When separated by gender, chi square analyses revealed that women were significantly more likely than men to be SNS users (Pearson $\chi^2 = 8.864$, $p < .01$). Male non-users of SNSs were significantly less likely to endorse the presence of innovation-seeking and imaginative/intuiting personality styles. Similar to the combined gender data, the low scores on these traits are suggestive of a limited preference or tendency toward creative and abstract thinking. Female regular users of such sites were significantly more likely to endorse MIPS-R items pertinent to realistic/sensing, gregarious/outgoing, and confident/asserting personality styles. The combination of personality styles suggests that female users are more likely to be interpersonally outgoing, self-confident, and pragmatic in their daily lives. These female users were also significantly less likely to endorse the presence of asocial/withdrawing personality traits. Combined, the personality traits of female users fit with "common sense" notions of people who use SNSs: they tend to be outgoing, friendly, confident, and unlikely to interpersonally withdraw (Ellison, 2009).

While the personality data collected in the master's thesis project were informative and complimentary to the existing literature base, the personality styles were

not of clear clinical utility. The MIPS-R is not a measure of pathological traits, and it is normed on a community sample; thus, the results are not generalizable to members of a clinical population. The present study is designed to build on the previous project by using a personality and symptomology measure that has a community (non-clinical) normative sample, while still measuring constructs that are of use to clinicians (Morey, 2003).

In another study, which serves as the starting point for the current project, an exploratory factor analysis was performed on a sample of college undergraduates to identify clusters of reasons for using SNSs (Miller, Weatherly, Terrell, & Ellison). The authors posited eight possible functions of SNS use (e.g., enhancing popularity, staying "in the loop" with friends and acquaintances, escaping aversive emotional states, etc.), and developed 55 Likert-type response items to measure these proposed functions. These 55 items were presented to a large sample of UND undergraduates (310 female, 166 male), along with questionnaires pertinent to the amount of average weekly SNS use. Undergraduates reporting no SNS use (36 female, 37 male) were eliminated from the analysis (N = 277). Responses to the 55 items were factor analyzed separately, by gender, using a principal axis extraction with oblique (Promax) rotation. While the sample size for male undergraduates was considered too small for a reliable solution, a five-factor model emerged for the female respondents, and, after deletion of poorly-loading items, accounted for 58% of item variance. The remaining items constitute the current Social Networking Use Questionnaire (SNUQ). The SNUQ items and their factor loadings are displayed in Table 1. The first factor, identified as *Maintaining Contact* was suggestive of a desire to maintain two-way contact with friends; it loaded items such as "I use social

networking sites to stay in touch with my friends" and "If I did not have a social networking account I would lose touch with my friends". The second factor, identified as *Social Comparison*, loaded items such as "It makes me feel really good to see my total number of friends increase" and "I keep track of the number of friends or contacts I have online", suggesting a motivation for accumulation, often competitive, of online friends (i.e., "I feel especially good when I know I have more on-line friends than someone else does"). The third factor, labeled *Information Gathering*, was saturated with items suggestive of motivation to peruse others' pages without making any contact (the apparent motivation reflected by Factor 1), e.g., "I find it entertaining to visit other peoples' personal pages to see what they have posted" and "I would rather look at other people's pages than interact with them on-line". Thus, Factor 3 reflects a certain voyeuristic orientation to online social networking while Factor 1 reflected a desire for social interaction. Factor 4 was suggestive of escape, e.g., "When life gets to be too much, I like to escape by logging onto my site" and "If I've had a really bad day, I like to feel better by logging onto my site"; this factor was identified as *Regulation of Negative Emotion*. Factor 5, labeled *Social Discomfort,* loaded items suggestive of a preference for online contact, given discomfort with face-to-face interaction, e.g., "On-line is really the only place I feel comfortable communicating with other people" and "Sometimes, I feel uncomfortable talking to people in the real world".   Scores generated for these factors by summing scores for high-loading items (those bolded in Table 1) were internally consistent (α = .70 - .86) and demonstrated marginal to adequate temporal stability (r_{tt} = .50-.70), based on responses from a small subsample (N=73) retested after a four-week interval (see Table 2). Further, these factor scores were moderately correlated with

amount of reported use and a composite score of self-reported use-related pathology,

adapted from DSM-IV indicators of substance abuse and dependence (e.g., missing class

due to SNS use, experiencing relational impairment due to use, etc.). Table 2 displays

these correlations. This study represents the first effort to empirically identify, via factor

analysis, functions of SNS use and their pathological correlates.

Table 1. Rotated Factor Solution for the SNS Function Items

Items	Factors				
	1	2	3	4	5
I especially like to log onto my site when I feel down or upset.	-.023	-.083	.063	**.723**	.139
I check to see how many friends or contacts my friends have online.	.001	**.554**	.087	.195	-.041
If I've had a really bad day, I like to feel better by logging onto my site.	.000	-.008	.054	**.883**	.049
I often have more fun with my friends online than I do when we are together.	.072	.061	-.020	.113	**.512**
I feel especially good when I know I have more on-line friends than someone else does.	-.092	**.743**	-.076	.108	.052
I find it entertaining to visit other peoples' personal pages to see what they have posted.	-.097	-.022	**.841**	-.010	.042
When life gets to be too much, I like to escape by logging onto my site.	.044	.090	-.094	**.790**	-.010
I like to look at my friends' personal pages even if I do not plan to message them.	.013	.021	**.712**	.118	-.046
It is easier to contact my friends online than to call them on the phone.	**.651**	-.010	-.068	-.042	.277
I use social networking sites to find out information about other people.	.102	.010	**.645**	-.018	.060
I use social networking sites to stay in touch with my friends.	**.727**	-.002	.134	.053	-.270
I keep track of the number of friends or contacts I have online.	.029	**.833**	.101	-.106	-.186
I use social networking sites to find out what others are doing.	.353	-.033	**.623**	-.014	-.001
I use social networking sites to contact my friends & interact with them.	**.746**	.018	.080	.067	-.174
If I did not have a social networking account I would lose touch with my friends.	**.718**	-.012	-.046	.025	.120
Messaging my friends online is the best way to stay in contact with them.	**.674**	.038	-.096	-.120	.337
It makes me feel really good to see my total number of friends increase.	.086	**.807**	-.033	-.075	.061
On-line is really the only place I feel comfortable communicating with other people.	.035	-.060	.051	.057	**.782**
It's very important that I have as many friends on-line as possible.	.003	**.591**	-.062	.014	.286
I would rather look at other people's pages than interact with them on-line	-.199	.157	**.500**	-.146	.318
Sometimes, I feel uncomfortable talking to people in the real world.	-.044	-.018	.080	.045	**.607**

Table 2. SNS Use Factor Reliability, Intercorrelation, and Correlation with Self-Report Indicators of SNS Use and Use-Related Pathology.

Factor	Reliability		Intercorrelations				Correlations with	
	α (N=277)	r_{tt} (N=73)	2	3	4	5	Use	Pathology
1 (*Maintain Contact*)	.833	.540	.365	.503	.462	.310	.337	.395
2 (*Social Comparison*)	.843	.604	-	.389	.418	.610	.336	.318
3 (*Information Gathering*)	.746	.705		-	.462	.115	.282	.396
4 (*Neg Emotion Regulation*)	.864	.655			-	.319	.353	.411
5 (*Social Discomfort)*	.702	.503				-	.225	.208

α = Cronbach's Alpha; r_{tt} = Test-Retest Reliability (4-week interval)

The Present Study and Hypotheses

The purpose of the present study was to examine the relationship between factors influencing the use of SNSs and clinically useful personality and psychopathology variables among undergraduate women. This overarching theme can be broken down in to constituent hypotheses:

Confirmatory factor analysis of the Social Networking Use Questionnaire. The present study sought to replicate the factors influencing SNS use found through exploratory factor analysis of the SNUQ. Additionally, the researcher intended to identify the SNUQ as a reliable measure of SNS use. The researcher sought to confirm that the reasons for undergraduate female use of SNSs did not change dramatically from the data collected one academic year prior to the present study. Thus, the hypothesis was that the factor structure of the SNUQ would remain the same for female undergraduate students, producing five components of similar content.

Relationship of factors/components with demographic and use variables.

Another research question looked to examine the relationships between the

factors/components of the SNUQ, demographics, and SNS use statistics from the sample.

Additional questions were added to account for the potential increase in SNS accessibility

as the technology of mobile devices has rapidly expanded, allowing individuals to log-in

anytime and anywhere with cellular service. Thus, a question was added to assess for the

primary modality in which the site is accessed, by computer or by mobile phone.

Additionally, a question was added to the SNUQ to identify those individuals who use

SNSs while at work. The amount of time spent on such sites for individuals who sit idly

at campus help desks or other such university jobs may have inflated levels of use for that

reason.

Hypotheses included anticipating that mobile users and those using the site at

work would be using SNSs significantly more. Other hypotheses were related to the

functions of use and potential symptoms of pathological SNS use. It was hypothesized

that the first factor (Maintaining Contact) would correspond to fewer significant

pathological symptoms of SNS use. This lack of significant relationship was

hypothesized because the first factor represents the stated purpose of SNSs and thus most

individuals surveyed likely use SNSs at least in part for this reason. Another hypothesis

was that the second and third factors (Social Comparison and Information Gathering),

would relate to pathological symptoms that had to do interpersonal difficulty. This

finding was hypothesized as these two factors suggest the use of SNSs to amass

information and friends, without a focus on the interaction that the sites intend. It was

also hypothesized that the fourth and fifth factors (Negative Emotion Regulation and

Social Discomfort) were likely to have the most significant relationships with the pathological symptoms of SNS use. This was expected because the items loading these factors imply reliance on SNSs to compensate for coping deficits, a reliance that may have the potential to lead to pathological use.

Replication of the internal factor structure of the Personality Assessment Inventory. An additional goal of the study was to further support the use of the PAI in a college sample by showing the replicability of the measure's internal structure in the present sample. It was hypothesized that the current female undergraduate sample would demonstrate a pattern similar to the two-factor model (see below) that has been found in previous research, with a factor for internalizing disorders and one for externalizing disorders (Hopwood & Moser, 2011; Hoelzle & Meyer, 2009; Morey, 2003).

Correlation of factors/components with psychometric indicators of pathology on the Personality Assessment Inventory. The final research question looked to examine the relationship between the SNUQ factors and the T scores for scales of the PAI. It was again hypothesized that the first SNUQ factor (communication and interaction with friends) would have fewer correlates with the PAI scores due to the ubiquitous nature of this factor influencing SNS use. Therefore, it was also hypothesized that the fourth and fifth SNUQ factors (Negative Emotion Regulation and Social Discomfort) would correlate with more PAI scores due to the description of psychological difficulties inherent in the functions themselves. The hypothesis was also made that the second factor (Social Comparison) would correlate with the PAI factor of externalizing disorders, as it suggested properties of lack of reciprocity and the potential for shallow or instrumental interpersonal relationships. Additionally, it was hypothesized that the fifth factor (Social Discomfort) would correlate with the PAI factor of internalizing disorders, given the presence of anxiety in the function's description.

31

CHAPTER II

METHOD

Participants

Five components of SNS use among female college students were identified in an earlier (Miller et al.) exploratory factor analysis (EFA). The current study includes a confirmatory factor analysis (CFA) to verify the generalizability of that previous model. Expert opinion on adequate overall sample size varies, emphasizing either minimal sample size or the number of participants per item, variable, or parameter. With respect to overall sample size, Tabachnick and Fidell (2007) suggest that at least 150 participants are minimally sufficient for stable solutions (p. 613), while Gorsuch (1983) suggests a minimum of 250. With respect to the ratio of participants to items, Gorsuch (1983) recommends 5:1, while Everett (1975) recommends a more stringent 10:1. A sample of 257 female participants, satisfying recommendations for minimal sample size, was collected at the University of North Dakota in Grand Forks. The sample size also meets Everett's criteria, based on the number of items to be analyzed (Everett, 1975).

One subject was removed from the data due to being under age 18, despite clearly stated criteria on the online consent form. Out of the remaining sample of 257 adult college females, there was an average age of 20.11 years (SD = 3.30), with a median and mode of 19. The minimum participant age was 18 and the maximum was 43. First-year students represented the largest proportion of the sample at 44.7%, with decreasing percentages as years in school increased, 26.8% second-year students, 18.3 % third-year

32

students, 6.6% fourth-year students, and 3.5% fifth-year or greater students. 91.8% of the sample was Caucasian, 2.3% were Native American, and 1.6% was Asian; Latina and African-American females represented less than one percent each. Mixed ethnicity or "other" represented 3.1% of the sample. The majority of students surveyed owned their own computer (94.2%) and smart phone (99.6%).

Procedure

The questionnaires (see appendices) were given through a survey posted on the SONA system, an online research program available to students at the University of North Dakota through courses that offer extra credit for research participation. Female undergraduates were recruited through advertisements posted around the Psychology department and information given during Psychology department courses. Participants accessed the study by logging onto the SONA system and filling out the questionnaire online; permission to post PAI test items online was obtained from Psychological Assessment Resources (PAR). Participants were given a random subject number provided by SONA software and were only allowed to participate in the study once. Before beginning the study, participants read consent information and digitally signed the form. Subjects were told that participation would require approximately 75 minutes. Participants were not asked to give contact information as there was no follow-up needed for data collection or analysis. The online format of the current study did not allow for the calculation of the PAI score relevant to suicidal ideation while individuals took the measure, and thus participants were debriefed online after completion of the survey. Debriefing was done by requiring participants to look at a screen with contact information for psychological and crisis services available to students and indicate that

they had read and understood the information on the page. Participants were given extra credit in their Psychology or other participating courses.

Measures and Analyses

The measures administered in the online survey were given in the order in which they are described below.

Demographic questionnaire. A demographic questionnaire was used to collect data about age, gender, year in school, ethnicity, etc. The variables were used to describe the sample and some characteristics were hypothesized to have some impact on the individual's use of social networking sites, such as access to a personal computer or capable mobile device. Questions regarding current access and history of access to the internet, and previous addiction or other diagnoses appeared to be unintentionally reverse coded and thus the data was not used to avoid possible misunderstanding of subjects' intended responses. The questionnaire items are provided in Appendix A.

Social networking site investment questionnaire. The questionnaire was created by the researcher in order to collect information about characteristics of participants' SNS use as well as potential negative outcomes related to this use. Blank fields were provided for the participant to enter the average amount of time spent and number of sites used. Fill-in-the-blank questions were used to encourage accurate reporting and to avoid floor or ceiling effects by arbitrarily assigning limits to multiple choice options. Participants were asked to estimate the amount of hours they spend accessing such sites during an average week. Hours were split into weekday (Monday through Thursday) and weekend use (Friday through Sunday) as differences in time of week used has been correlated with different components of use in previous research

analyses (Miller et al.). Also, yes or no questions examined potential social and emotional consequences of use, as well as modified addiction criteria. As discussed previously, questions addressed the modality through which a participant accesses the social networking sites (personal computer or mobile device), and the use of social networking sites while at work. Negative consequences and primary reasons for use of such sites at work were also assessed. The questions were intended to closely mimic the abuse/dependence criteria from the Diagnostic and Statistical Manual, Fourth Edition, Text Revision (American Psychiatric Association, 2000). Closed questions were examined by chi-square tests of significance to look for patterns in responses for each type of social networking user (Howell, 2007, p. 147). Open-ended questions about frequency of use were analyzed using box plot diagrams in order to identify extreme responses and were removed so as to reduce the skew of the distributions and reduce the impact of the extreme data points on the means (Tabachnick & Fidell, 2007, p. 77). The questionnaire items are provided in Appendix B.

      Social networking site questionnaire. The SNUQ was created by the researcher along with colleagues to obtain information from participants about the factors that influence their use of social networking sites. The same measure was used in previous research, discussed above (Miller et al.). The items allow the individual to indicate the degree to which they engage in a given SNS use behaviors or resonate with a given attitude. The individuals stipulate how often a given statement is for them using a 7-point scale: "never," "almost never," "seldom," "half the time," "usually," "almost always," or "always." The measure consists of 55 questions, covering a variety of potential factors that may influence SNS use. The questionnaire items are provided in Appendix C.

Time allocation questionnaire. Individuals were asked to allocate 100 points across a variety of activities on social networking sites. Subject-matter experts were consulted in the creation of this measure. The measure serves as an indicator of the approximate percentage of time a given individual spends engaging in different types of social networking site activities during an average log-in session. Individuals were asked to indicate whether the total allocation of their points across categories summed to 100; only those participants that allocated the full 100 points, without going over, were included in analyses of this measure (26 participants were excluded due to the incorrect allocation of points). The questionnaire items are provided in Appendix D.

Personality Assessment Inventory. Given its unique combination of statistical and normative characteristics that make the measure ideally suited for the present study's population and purpose, the Personality Assessment Inventory (PAI) was chosen to measure personality and indicators of psychopathology. The PAI is a 344-item self-report measure that requires a fourth-grade reading level, and administration typically requires one hour. The PAI is to be used with adults over the age of 18. The PAI was designed to measure constructs relevant to contemporary models of various clinical syndromes and personality variables pertinent to treatment, e.g., the cognitive, affective, and vegetative symptoms of depression (Morey, 2003). In contrast to other clinically-oriented personality measures (e.g., Minnesota Multiphasic Personality Inventory, Second Edition or Millon Clinical Multiaxial Inventory, Third Edition), the PAI's response format allows for more nuanced report of symptoms, traits, and behaviors, as the respondent answers on a four-alternative scale (totally false, slightly true, mainly true, and very true). The

makers of the PAI also conducted panel reviews of the test items to reduce the likelihood of test bias against any demographic groups (Morey, 2003).

The PAI can be administered in paper and pencil or digital form; the measure was entered into the SONA system (described above) and given via an online survey. The number of questions presented per page was limited to a maximum of 10 due to copyright limitations concerned about possible reproduction of the measure from printing the screens. The survey required participants to complete all fields and thus leaving items blank was not a concern; the participants were told in the consent form that they were free to discontinue the study if the questions became too difficult or uncomfortable to answer. The PAI converts raw scores into standardized t scores based on a normative sample. t scores have a mean of 50 and a standard deviation of 10. Thus, if a participant scores one and half standard deviations or more above the normative sample mean ($\geq 65t$) on any scale, it suggests that the individual is experiencing significantly more of a particular symptom or tendency than majority of the normative sample. Specifically, if there is a score above $65t$ the individual has scored above 93% of the normative sample, or on the other hand one could describe the score as being among the top 7% of the normative sample.

When scoring the PAI, two normative samples are available from which to reference an respondent's t scores. A community sample represents adults living in the United States and the clinical sample represents individuals seeking mental health services for a variety of presenting problems. The present study used the community sample to reference the sample university students' profiles, as these individuals were not clinically referred. Implications for clinical problems and disorders can still be discussed;

however, the purpose of the testing will be to explore characteristics rather than diagnose or identify diagnosable impairment or distress (Morey, 2003).

As a self-report measure, the PAI is vulnerable to respondents' intentional and unintentional distortion, response biases, etc. To identify likely exaggeration or minimization, of personal problems, inconsistent or random responding, and a variety of other threats to test validity, the PAI includes a variety of validity scales. Morey (2003) provides optimal cutoffs for these scales, based on clinical and experimental research on the diagnostic efficiency of the PAI. These scales are described below, and the criteria for participant elimination specified.

The PAI contains four primary validity scales that identify factors that could potentially distort a respondent's profile. The Inconsistency Scale (ICN) compares pairs of items with similar content unique to the scale. High scores on ICN suggest lack of attention to item content or an inconsistent responding style, among the community normative sample, a 73t was required to reach significance; all individuals scoring $\geq$ 73t were removed from the analyses. The Infrequency Scale (INF) consists of items that are expected to be endorsed negatively by individuals regardless of symptomology or psychopathology. The items are extremely unlikely traits or events, without being bizarre. High scores suggest lack of attention to content, confusion, or random responding. Among the community normative sample, a 75t was required to reach significance; all individuals scoring $\geq$ 75t were removed from the analyses. The Negative Impression Scale (NIM) consists of items endorsed infrequently by both normal and clinical samples that suggest a tendency to perceive the self, others, and events as more negative than how others might evaluate them. Scale items are either exaggerated impressions or bizarre

38

symptoms; high scores suggest an attempt to portray the self in a negative light. High scores may also indicate random responding, extremely low self-esteem, or malingering. Among the community normative sample, a 92t was required to reach significance; all individuals scoring ≥ 92t were removed from the analyses. The Positive Impression Scale (PIM) contains items that are infrequently endorsed by both normal and clinical samples as they involve the denial of minor faults and an extremely positive self-presentation. High scores suggest that the individual was likely trying to present him or herself in an overly positive manner, affecting the validity of the remaining scales. Among the community normative sample, a 68t was required to reach significance; all individuals scoring ≥ 68t were removed from the analyses (Morey, 2003).

The PAI consists of nine clinical scales, many consisting of subscales, covering the breadth of symptomology possible in the given area of functioning. The Somatic Complaints Scale (SOM) reflects complaints and concerns about general physical functioning and overall health. SOM also suggests information about how the individual interprets impairment occurring as a result of somatic complaints. High scores indicate concern, impairment, and pessimism associated with somatic complaints. Marked elevations on SOM suggest rumination, severe fatigue, weakness, and debilitation. The three subscales assess the subcategories of somatic complaints: conversion (SOM-C), somatization (SOM-S), and health concerns (SOM-H). High scores on the subscales suggest rare symptoms associated with conversion disorder (vision problems, paralysis, numbness, etc.), routine physical complaints consistent with somatization (headaches, gastrointestinal problems, pain, etc.), and preoccupation with complex issues related to health and physical functioning, respectively (Morey, 2003).

Two scales address anxiety-related symptoms. The Anxiety Scale (ANX) assesses somatic feelings of anxiety, as well as generalized rumination and fear. High scores suggest a tendency toward anxious rumination and the physical experiencing of anxiety. The three subscales assess cognitive (ANX-C), affective (ANX-A), and physiological (ANX-P) modalities of anxiety expression. High scores on the subscales suggest impairing rumination and worry, perceived high levels of tension/stress, and overt physical symptoms of anxiety (trembling, sweating, palpitations, etc.), respectively. The Anxiety-Related Disorders Scale (ARD) measures the extent to which anxiety is displayed overtly. High scores suggest not only impairing distress and fear of particular things and situations, but also the ability of others to see the anxious traits. The three subscales assess obsessive-compulsive (ARD-O), phobic (ARD-P), and traumatic stress (ARD-T) three of the anxiety disorders that have unique symptom profiles. High scores on the subscales suggest intrusive thoughts and rigidity, common phobic fears, and the continued distress from past traumatic experience, respectively (Morey, 2003).

The Depression Scale (DEP) measures traditional symptoms of depression and the severity of such symptoms. As t scores increase, there is a greater likelihood of the respondent having or receiving a diagnosis of major depression. The three subscales assess cognitive (DEP-C), Affective (DEP-A), and Physiological (DEP-P) components of depression. High scores on the subscales suggest impairment in concentration ability and low self-worth, feelings of sadness and anhedonia, and impairment in physical functioning, respectively (Morey, 2003).

The Mania Scale (MAN) assesses prototypical symptoms of a manic episode, more specifically, the common disruptions in mood, cognitions, and behavior that occur

during manic episodes. High scores suggest high energy, impulsivity, and difficulty with interpersonal interactions. The higher the *t* score, the greater the likelihood that the individual is experiencing impairment as a result of his or her symptoms. The three subscales assess the activity level (MAN-A), feelings of grandiosity (MAN-G), and irritability (MAN-I) of individuals. High scores on the subscales suggest over-involvement and disorganization in activities, expansiveness and inflated self-esteem, and interpersonal difficulty due to frustration and irritability, respectively (Morey, 2003).

Two scales assess psychotic disorders. The Paranoid Scale (PAR) measures symptoms and characteristics consistent with paranoia across the different diagnoses of which it may be a part. High scores indicate overly suspicious and hostile behavior and thoughts. Extreme *t* scores may indicate potentially delusional thinking. The three subscales assess the individual's hypervigilance (PAR-H), thoughts of persecution (PAR-P), and feelings of resentment (PAR-R). High scores on the subscales suggest suspiciousness and monitoring of the environment, belief that others are out to get him or her, and bitterness and cynicism in interpersonal relationships, respectively. The Schizophrenia Scale (SCZ) measures various dimensions of schizophrenia symptoms. High scores suggest broad difficulties in social relationships, concentration, thinking, and decision making. The three subscales measure psychotic experiences (SCZ-P), social detachment (SCZ-D), and thought disorder (SCZ-T). High scores on the subscales suggest unusual perceptions/sensations/ideas, social isolation, and confusion/disorganization, respectively (Morey, 2003).

Two scales assess characterological (i.e., Axis II) pathology. The Borderline Scale (BOR) measures features of Borderline personality. High scores suggest impulsivity,

emotional lability, anger, suspiciousness, anxiety, neediness, and ambivalence in relationships. Markedly elevated *t* scores suggest an increased likelihood of the presence of borderline personality traits. Engaging in impulsive and destructive behaviors can be assessed by looking at other behavioral scale elevations. The four subscales assess the potential areas of personality immaturity: affective instability (BOR-A), identity problems (BOR-I), negative relationships (BOR-N), and self-harm (BOR-S). High scores on the subscales suggest rapid mood changes, feelings of emptiness and purposelessness, history of intense and ambivalent relationships, and impulsivity with high potential for negative consequences, respectively. The Antisocial Features Scale (ANT) measures those traits consistent with antisocial personality disorder and traditional symptoms of psychopathy. High scores indicate impulsivity and hostility, as well as a history of law-breaking or other anti-social behaviors. The more elevated the *t* score, the more likely the individual is to display prominent traits of antisocial personality disorder. The three subscales measure antisocial behaviors (ANT-A), egocentricity (ANT-E), and stimulus-seeking (ANT-S). High scores on the subscales suggest a history of antisocial/illegal activities, lack of empathy and a tendency to exploit others, and need for excitement and avoidance of boredom, respectively (Morey, 2003).

Two scales assess substance abuse. The Alcohol Problems Scale (ALC) assesses alcohol use, abuse, and dependence. High *t* scores suggest that the individual meets criteria for alcohol abuse, with alcohol negatively affecting his or her life. Extreme *t* scores are associated with severe alcohol dependence. The Drug Problems Scale (DRG) assesses drug use, abuse, and dependence. High *t* scores suggest that the individual meets criteria for drug abuse, with a given drug negatively affecting his or her life. Extreme *t*

scores are associated with severe drug dependence (Morey, 2003). No subscales exist for these measures.

Five scales assess considerations for psychological treatment. The Aggression Scale (AGG) measures a wide variety of aggressive behaviors that have the potential to influence a variety of different clinical diagnoses. High scores suggest chronic anger and increased likelihood of expressing the anger and hostility. The three subscales are used to indicate the modality the individual tends to use to express his or her aggression: aggressive attitude (AGG-A), verbal aggression (AGG-V), and physical aggression (AGG-P). High scores on the subtests suggest poor control over expression of anger and belief in its utility, verbally abusive behavior, and physical aggression (physical fights, property damage, threats of violence, etc.), respectively. The Suicidal Ideation Scale (SUI) evaluates the potential of suicidality, ranging from fleeting thoughts to a high level of intent. The higher the t score, the more severe and more frequent the thoughts of suicide are, with extreme t scores suggesting preoccupation and concrete plans for suicide. This precaution was approved by the Institutional Review Board at the University of North Dakota. The Stress Scale (STR) assesses the amount of life stressors present for the individual. Possible life stressors include interpersonal, family, financial, and employment problems. High t scores suggest that the stressors are having a large impact on the individual and the stressors are also affecting other areas of his or her life. Extreme t scores indicate that the individual is experiencing feelings of hopelessness, bitterness, and being overwhelmed. The Nonsupport Scale (NON) measures the individual's perceived availability and quality of social support. High t scores suggest that the individual feels as though his or her interpersonal relationships offer little support

or closeness and the individual may be experiencing feelings of social isolation. The

Treatment Rejection Scale (RXR) assesses aspects of an individual's attitude that could

interfere with motivation for treatment adherence. High *t* scores indicate that the

individual has difficulty with vulnerability and is unlikely to admit to personal problems.

A high scoring individual is also likely to be unmotivated to change his or her current

situation (Morey, 2003).

Two scales measure an individual's interpersonal style. The Dominance Scale

(DOM) measures a person's desire to control his or her personal relationships. High *t*

scores suggest that others may view the individual as domineering and controlling. The

individual may also expect others to comply with his or her requests and provide him or

her with admiration and respect. Low *t* scores indicate a passive and self-effacing

approach to relationships. The Warmth Scale (WRM) measures the individual's interest

and comfort with close relationships. High *t* scores indicate that the individual is warm,

friendly and sympathetic. These individuals may have difficulty engaging in conflict and

maybe overly trusting. Low *t* scores suggest that the individual may be distant and place

little value on close relationships (Morey, 2003).

Internal structure of the Personality Assessment Inventory. Factor analyses of

the PAI have generally revealed two underlying dimensions of the measure. Ruiz and

Edens (2008) found a two-factor model for 13 scales (11 clinical and aggression and

suicide) of the PAI that fit the theoretical distinction of internalization and externalization

disorders. They used exploratory and then confirmatory factor analyses and determined

that the two-factor model best fit the subset of 13 scales in their corrections sample (Ruiz

& Edens, 2008). Hopwood and Moser (2011) attempted to fit this two-factor model to a

sample of college students. They found that the Ruiz and Edens (2008) model did not fit as well as their alternative, simplified two-factor model based upon diagnostic interview research on internalization and externalization (Krueger & Tackett, 2003). The simplified version included the scales of alcohol use (ALC), drug use (DRG), and antisocial traits (ANT) for externalization and the scales of anxiety (ANX), anxiety related disorders (ARD), and depression (DEP) for internalization. The simplified model had the best fit with the data in their confirmatory factor analyses. They also found the two-factor structure to be viable across genders and ethnicities in their college sample (Hopwood & Moser, 2011).

In a study of a non-patient sample, Blais (2010) found that a clear three-factor model emerged when looking at the 11 PAI clinical scales along with the 5 NEO (neuroticism, extraversion, introversion, openness, and agreeableness). The three factors were 1) positive loadings of neuroticism, anxiety, depression, and borderline; 2) negative loadings of agreeableness and conscientiousness, with positive loadings of drug abuse and antisocial personality; and 3) positive loadings of extraversion, openness, and mania, and a negative loading of depression (Blais, 2010). This structure was described as approximating the Big Three originally proposed by Markon (2005).

Hoelzle and Meyer (2009) found three-dimensions in their factor analysis of the 22 PAI scales, a structure that approximated some of the original component-analysis studies done by Morey (1991). Hoelzle and Meyer (2009) found the first component accounted for a variety of psychological problems as well as openness to discussion of psychological problems. The second factor included antisocial traits, mania, dominance, and aggression suggesting an underlying acting out component. The third factor

45

represented antisocial traits, alcohol use, drug use, as well as reluctance to respond

honestly to the test, elevating the validity scales. The model was found to be highly

congruent across five additional archival samples. While the last two factors have

elements in common, the psychological treatment of individuals scoring highly on these

factors would likely vary significantly (Hoelzle & Meyer, 2009).

Factor scores from the PAI were combined with the generalized factor scores

from the SNUQ measure in an exploratory factor analysis that allowed the researcher to

look for relationships, allowing the variables to be grouped into factors to explain the

variance in the sample (Tabachnick & Fidell, 2007, p. 633). Because factors are

identified by analyzing the covariances of variables, this technique allowed the researcher

to address the research hypothesis that clinical characteristics and/or personality would

cluster with the previously found factors of use. A factor analysis via PASW 18 software

was used in the analysis of mental health constructs and personality as this element of the

study was in an exploratory phase and thus clear factors were not hypothesized

(Tabachnick & Fidell, 2007, p. 635). There was orthogonal rotation of the factor

structure; the varimax procedure simplified interpretation of the structure and loadings by

ensuring the independence of the components (Tabachnick & Fidell, 2007, pp. 637-639).

CHAPTER III

RESULTS

Confirmatory Factor Analysis

As described above, the present study sought to replicate previous research by confirming the fit of a five-factor reduction model of the SNUQ onto a new sample of female college students. A confirmatory factor analysis (CFA) was completed using Mplus 6.12 structural equation modeling software (Muthen & Muthen, 2011). Model fit was evaluated using multiple fit criteria, Comparative Fit Index (CFI $\geq$ 0.95: Rigdon, 1996; Hu & Bentler, 1999; Yu, 2002), root mean square error of approximation (RSMEA $\leq$ .05: Rigdon, 1996; Hu & Bentler, 1999; Yu, 2002) and standardized root mean square residual (SRMR $\leq$ .07: Hu & Bentler, 1999). A chi-square test of model fit ($\chi2 \leq 0.01$: Hu & Bentler, 1999; Yu, 2002) was included; however, in larger samples, the chi-square value is almost always statistically significant, and is thus less useful for evaluating model fit.

The chi-square value for overall model fit was significant, $\chi2$ (142) = 212.27, p = .0001, which suggests an adequate fit of a model to the data. As indicated, given the large sample size, the other measures of fit should be examined as well. The additional fit indices also suggest an adequate overall fit: CFI = .937, RMSEA = .044, SRMR = .054. All items loaded significantly ($p < .001$) onto their respective factors. As described previously, the five factor model suggests that the main reasons for Facebook use among college females are: 1) communication and interaction with friends; 2) focus on

47

popularity and social comparison; 3) gathering information about others; 4) emotional regulation during difficult times; and 5) social anxiety or preference for virtual rather than real-world interaction. The analysis replicated the five factor model; the loadings can be seen in Table 3. The first factor had large loadings from items that described wanting to keep in touch with friends and the ease with which this is accomplished through SNS use. The second factor had large loadings from items that suggested use of SNSs to look at others' information as well as a preoccupation related to having more friends than others. The third factor had large loadings from items that suggest using SNSs to gain information about others rather than communicating with them. The fourth factor had large loadings from items that suggested use of SNSs when feeling upset as a way to improve or regulate mood. The fifth factor had large loadings from items that suggested SNSs provide a safer or more comfortable environment for the individual to communicate with others. Using the chosen, high-loading items from the SNUQ, the five factors were translated into factor scores. The scores were created by summing the score from each of the factors' constituent items.

Table 3. Standardized Loadings for Five-Factor Confirmatory Model

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
I especially like to log onto my site when I feel down or upset.				.793	
I check to see how many friends or contacts my friends have online.		.701			
If I've had a really bad day, I like to feel better by logging onto my site.				.859	
I often have more fun with my friends online than I do when we are together.					.686
I feel especially good when I know I have more online friends than someone else does.		.665			
I find it entertaining to visit other peoples' personal pages to see what they have posted.		.660			
When life gets to be too much, I like to escape by logging onto my site.				.781	
I like to look at my friends' personal pages even if I do not plan to message them.			.635		
It is easier to contact my friends online than to call them on the phone.	.700				
I use social networking sites to find out information about other people.			.829		
I keep track of the number of friends or contacts I have online.		.799			
I use social networking sites to find out what others are doing.			.844		
I use social networking sites to contact my friends and interact with them.	.637				
If I did not have a social networking account I would lose touch with my friends.	.708				
Messaging my friends online is the best way to stay in contact with them.	.737				
It makes me feel really good to see my total number of friends increase.		.791			
Online is really the only place I feel comfortable communicating with other people.					.772
It's very important that I have as many friends online as possible.		.686			
Sometimes, I feel uncomfortable talking to people in the real world.					.637

Personality Assessment Inventory Validity

Of the 258 completed PAIs received from participants, 30 were invalid due to significant elevations on one of the four validity scales, as described above. Those individuals with invalid profiles had significantly shorter completion times of the questionnaire battery (including all measures), $F(1, 257) = 8.446$, $p < .01$. The mean completion time of the assessment battery for valid PAIs was 48.10 minutes

(SD = 20.33), with a range of 22 minutes to 178 minutes. The mean completion time of the assessment battery for invalid PAIs was 36.97 minutes (SD = 14.09), with a range of 16 to 64 minutes. Invalid PAI profiles came from significantly older participants, $F(1, 256) = 4.851, p < .05$. The mean age for valid PAIs was 19.93 years (SD = 2.72) while the mean age for invalid PAIs was 21.33 years (SD = 6.05). There were no significant differences between participants with invalid and valid profiles when examining their reported average hours of SNS use on weekdays or weekends.

Internal Structure of the Personality Assessment Inventory

As discussed above, previous research has found a two factor model for the PAI in community samples, with one factor representing internalizing disorders and the other factor representing externalizing disorders. With the present sample a factor analysis was done including only those subjects with valid PAI profiles, according to cut-offs discussed above among the four validity scales (30 individuals removed) and after removing the 11 excessive users of SNSs that were identified as outliers by box plot analysis also as described in the results above. These participants were removed due to the intent to create factor scores out of the analysis. Thus, the researcher did not want to tailor the factor scores to extreme, unrepresentative members of the current sample. The component structures were rotated obliquely using a promax rotation and the Kaiser criterion (Eigen values greater than one) indicated the presence of four distinct components. An oblique rotation of the variables was done due to the high likelihood of correlation between the components. The pattern matrix that results from the oblique rotation indicates the unique contributions of each factor to the variance present in the items. Thus, the overlap between the factors is eliminated, displaying the loadings more

50

clearly rather than inflating the loadings due to the overlap (Tabachnick & Fidell, 2007, p. 627).

The four-component model explained 69.76% of the variance. The first component represented the internalizing disorders, loading scales related to depression and anxiety. The second component, in contrast, appeared to load externalizing disorders, such as mania, paranoia, borderline personality, antisocial personality, and aggression; the second component also had strong loadings of the treatment indicators of stress, non-support, and dominance. The strong loadings on the third component were the treatment indicators of resistance to treatment, dominance, and warmth. The final fourth component had strong loadings on drug and alcohol use. The present sample does not replicate previous research findings on the PAI's internal structure; for example, the drug and alcohol scales load onto a factor with externalizing behaviors and symptoms. Factor scores were computed using SPSS, as the factors should fit the current sample as exactly as possible and do not need to be generalized to other potential samples. While the PAI did not reduce into two simplistic components, this may have been due to the limited sample, the gender limits of the sample, as the extant research was for both men and women, and the relative health of the present sample as the sample was made up of university students that are of substantial enough mental health and stability to be enrolled in courses and participating in extra credit activities. The previous samples were of mixed gender college students from larger university samples, which would account for a greater representation of differing functioning levels. Additionally, different scale combinations were entered into the existing studies, making generalized conclusions difficult. Given these potential differences it is still impressive that the general

internalizing/externalizing split between components was visible. For a display of the

component loadings, please see Table 4.

Table 4. Standardized Loadings for PAI Four-Factor Model

PAI Subscale	Factor 1 *Internalizing*	Factor 2 *Externalizing*	Factor 3 *Treatment Factors*	Factor 4 *Alcohol & Drug use*
Somatic Complaints (SOM)	**.873**	.008	.264	.061
Anxiety (ANX)	**.912**	-.047	-.016	.021
Anxiety-Related Disorders (ARD)	**.854**	.141	.069	-.132
Depression (DEP)	**.564**	.134	**-.340**	.044
Mania (MAN)	.222	**.748**	**.461**	-.108
Paranoid (PAR)	.222	**.613**	-.193	-.100
Schizophrenia (SCZ)	**.319**	**.391**	**-.356**	.063
Borderline (BOR)	**.360**	**.513**	-.178	.087
Suicidal Ideation (SUI)	.308	**.354**	-.073	.097
Antisocial Features (ANT)	**-.347**	**.796**	.114	**.464**
Alcohol Problems (ALC)	-.051	.167	.004	**.828**
Drug Problems (DRG)	.124	.025	.082	**.779**
Aggression (AGG)	.058	**.789**	.205	.023
Stress (STR)	.111	**.548**	-.094	.193
Non-Support (NON)	.120	**.545**	-.351	-.039
Treatment Rejection (TXR)	-.178	.096	**.689**	.015
Dominance (DOM)	-.049	**.573**	**.856**	-.217
Warmth (WRM)	**.325**	-.248	**.856**	.297

The factors were found to correlate amongst themselves. For the correlation matrix values please see Table 5.

Table 5. Factor Correlation Matrix for PAI Four-Factor Model

Factor	*1*	*2*	*3*	*4*
1	1.000	**.597**	**-.453**	**.387**
2	--	1.000	-.302	**.368**
3	--	--	1.000	-.077
4	--	--	--	1.000

Social Networking Site Use

In the sample of 257 undergraduate females only three denied use of SNSs during

an average week and were thus excluded.

Access to social-networking-capable devices and the internet. Only 15 of the

remaining 254 female students did not own their own computer. Most of the students

surveyed grew up in households that had internet access (81.9%) and all but 13 students had access to the internet in their current residences. All 254 participants reported owning cell phones capable of internet connectivity, with 59.8% accessing SNSs through their phones.

Hours of use. Participants had an average use during the week (Monday through Thursday) of 7.73 hours (SD = 6.37) and weekend use (Friday through Sunday) averaging 5.36 hours (SD = 5.51). The ranges for both weekday and weekend use was 0 to 40. Outliers were identified using the outer fence of box plots and were removed from analyses regarding hours of SNS use; a total of 11 subjects were removed from the sample due to extreme use, defined by box plots as 30 or more hours for weekdays and 20 or more hours for weekends. Nearly a third of the sample (29.5%) reported being able to access SNSs while at work. The average daily use at work was 2.41 hours (SD = 2.51).

Allocation of time and non-clinical use. After removing the 11 excessive users identified through box plots, the time allocation questionnaire was analyzed. Individuals reported engaging in all of the ten possible activities, which included: looking at their own photos; changing your information/photos; posting on own profile (comments, status, links, photos, notes, etc.); writing to others (walls, messages); reading/browsing information about or photos of others (not posting); playing games or using applications by self; playing games or using applications with others; chatting with friends online through Facebook; looking for new friends; and creating, managing, or browsing groups and/or events. The greatest amount of average use (based upon the percentage of an individual's total 100 point allocation) was reported to be viewing others' profiles with a mean of 25.01% (SD = 18.02). The second most popular SNS activity was reading

information posted on the individual's profile by themselves or others, with a mean of 18.12% (SD = 14.11). The third most popular SNS activity was writing to other's through a variety of mediums found on SNSs, with a mean of 13.87% (SD = 9.30). The least popular activity was to create, manage, or browse groups and events, with a mean of 1.08% (SD = 3.26). Social networking sites were described as helping create additional social interaction, with 48.8% reporting making a friend through an SNS, and 8.7% reported meeting a significant other through use of SNSs. A small percentage of the sample indicated posting of false information on their profiles (11.4%), and 9.4% indicated using a false name at one time or another while communicating with others through SNSs.

Pathological use. Many individuals endorsed negative consequences and changes to their lives as a result of their use of SNSs. As described above, the questions asked were modified from the substance abuse/dependence criteria found in the DSM-IV-TR. In the present sample, 31.6% reported a history of what they considered to be addictive behavior or abuse/dependence diagnoses; the specific diagnoses were not stipulated. When asked if they had declined any social invitations in order to use SNSs, 4.7% of the sample indicated "Yes." Just over 12% (12.2%) of the sample indicated having been late to work or class as a result of use of SNSs, with 9.4% of these individuals finding themselves late once a month or less, 2% being late once each month, another 2% being late several times each month, and only two subjects (0.8%) reported being late due to SNS use multiple times each week. A surprising 15.7% reported having relationship problems due to their use of SNSs. The majority of those surveyed (66.9%) reported academic problems as a result of their use of SNSs. Nearly all participants indicated

spending more time than originally intended on the sites (91.7%). Almost half of the sample (48.0%) indicated the negative impact of SNS use on their sleep. The majority of SNS users sampled (69.3%) reported attempts to cut back on their use of SNSs, with 10.6% of those individuals reporting withdrawal-like symptoms upon cutting back (e.g., irritability and tension). Of the individuals that attempted to cut down on their SNS use, only 36.6% reported success in their reductions. An aggregate variable was created, summing the number of modified abuse/dependence criteria that participants positively endorsed.

Relationships Between Social Networking Use Variables

   Demographics. Due to the unequal sample sizes with some of the demographic and SNS use items statistical analyses were included to make sure that necessary assumptions of the data were met. When ANOVAs were used, Levine's test of homogeneity of variance was conducted to assure that the variables did not have significantly different variance. Those ANOVAs are not considered robust with the discrepancy in variance and thus are not reported here as significant.

   Demographic variables and hours of use. No significant differences in SNS hours of use were found across ethnic groups or ages represented in the study. Additionally, no significant differences in hours of SNS use were found between individuals that owned their own computers versus those that did not. There were significant main effects for differences in hours of SNS use across years in school, weekday use $F(4, 242) = 2.723$, $p < .05$. While post-hoc analyses did not reveal any significant differences between particular years, the trend suggested that first- and second-year students reported more hours of use.

Demographics and social networking use. Chi Square analyses revealed

significant differences among those reporting having met a significant other through the

use of SNSs with individuals who have access to the internet at their current residence

being more likely than those without internet access to have met a significant other using

SNSs, $\chi2(242) = 10.101$, $p = .001$. Female students that reported growing up in a home

without access to the internet were more likely than those with access to internet in their

family homes to have met a significant other through use of SNSs, $\chi2(242) = 8.120$,

$p < .05$. Female students that reported using SNSs at work were more likely to report

having met a friend by using SNSs than those who do not access SNSs at work,

$\chi2(242) = 6.077$, $p < .05$. Chi Square analyses revealed significant differences among

those who have a history of posting false information on their SNS accounts. Female

students that denied having access to the internet in their current place of residence were

significantly more likely than those with current home internet access to have a history of

posting false information on their SNS accounts, $\chi2(242) = 5.835$, $p < .05$.

Demographics and pathological use. Chi Square analyses showed that among

individuals reporting academic problems, there were significant differences among

female students in different years of their schooling, $\chi2(242) = 10.049$, $p < .05$. Female

students in their fifth year and above reported academic problems due to SNS use less

frequently than what would be estimated based on representativeness of the sample.

Additionally, a significant difference was found in the report of academic problems

between students who owned their own computer and those that did not, with those

owning their own computer being more likely to report academic problems as a result of

SNS use than would be estimated based on the distribution of the sample, $\chi 2(242) = 11.305$, $p = .001$.

Chi Square analyses revealed significant differences among those reporting being made late by their SNS use. Individuals that denied a history of addiction behavior or diagnoses were more likely to have been made late by their SNS use than were those who reported such a history, $\chi 2(242) = 6.193$, $p < .05$. Additionally, individuals that report using SNSs at work were more likely than those who do not use such sites at work to report being made late by their use, $\chi 2(242) = 7.435$, $p < .01$. The aggregate variable, indicating the number of modified abuse/dependence criteria an individual endorsed was significantly related to the demographic variable of owning a computer. Those individuals that did not own their own computer had significantly higher scores on the aggregate measure, $F(1, 245) = 4.27$, $p < .05$.

Demographics and time allocation. When examining the relationship between how a participant spent their time and the demographic variables collected, one significant relationship was identified. Those individuals that grew up in a household with internet access used the online chatting function of SNSs significantly more ($M = 12.41$, SD = 14.29) than did those who did not grow up in a household with internet ($M = 6.44$, SD = 8.21), $F(1, 239) = 7.28$, $p < .01$. No significant differences were found in reported use of SNSs and access to internet in their current residence or among other demographic variables.

Demographics and factors of social networking use. The five SNUQ factors were put into one-way ANOVAs with the demographic and SNS use data from the sample. Individuals with invalid profiles and those outliers in SNS use were excluded

57

from these analyses. No significant differences were found among participants on SNUQ

factor scores based on participant year in school, ethnicity, or age. Individuals that

reported having access to the internet at their current residence had significantly lower

scores on the second and fourth SNUQ factors: $F(1, 217) = 7.516$, $p < .01$ and $F(1, 217)$

$= 6.223$, $p < .05$, respectively. No other significant differences were found among

demographic information and the SNUQ factors. All SNUQ factors significantly

($p < .05$) correlated with the reported average hours of use on the weekdays or weekends;

however, none of these correlations met the meaningfulness criteria of explaining at least

10% of the variance ($r^2 \geq .10$).

   Demographics and Personality Assessment Inventory variables. Age of the

participants was not significantly correlated with any of the PAI internal structure

components. The internal structural components of the PAI were put into one-way

ANOVAs as dependent variables with the demographic and SNS use data serving as

independent variables. Individuals with invalid profiles and those outliers in SNS use

were excluded from these analyses. No significant differences were found among

participants on PAI structure based on participant year in school. Individuals that

reported growing up with the internet had significantly higher scores on the second PAI

internal structure component: $F(1, 216) = 8.102$, $p < .01$. Individuals that reported having

access to the internet at their current residence had significantly lower scores on the

second PAI internal structure component; $F(1, 217) = 10.753$, $p = .001$. These

individuals with current internet access had significantly higher scores on the third PAI

internal structure component $F(1, 217) = 8.103$, $p < .01$. When examining the

relationship between PAI internal structure components and other SNS use

characteristics, no significant relationships were found between the components and having a history of using a false name, and mobile phone access to SNSs.

Social networking use characteristics. Due to the unequal sample sizes with some of the SNS use items statistical analyses were included to make sure that necessary assumptions of the data were met. When ANOVAs were used, Levine's test of homogeneity of variance was conducted to assure that the variables did not have significantly different variance. Those ANOVAs are not considered robust with the discrepancy in variance and thus are not reported here as significant.

Social networking use characteristics and hours of use. Individuals that accessed SNSs through their mobile phones reported significantly more weekday SNS use compared to individuals without this type of access, $F(1, 245) = 10.537$, $p = .001$. No differences were found between mobile phone SNS users for weekend use. No significant differences were found in hours of SNS use with other the SNS use characteristics of posting false information, using a false name, accessing SNSs while at work, and meeting friends or significant others through SNS use.

Social networking use characteristics and pathological use. Chi Square analyses revealed significant differences between individuals that used their mobile phones to access SNSs and those without this form of access in regard to spending more time than originally intended using SNSs, $\chi2(247) = 5.170$, $p < .05$. Additionally, individuals with mobile phone access to SNSs were more likely to be late for work or class than would have been expected given the sample distribution, $\chi2(247) = 3.841$, $p < .05$. Students that reported using SNSs while at work were more likely than those that do not access SNS at work to report relationship problems due to their SNS use, $\chi2(242) = 13.219$, $p < .01$.

Individuals reporting SNS use at work reported more academic problems than would have been expected given the sample distribution, $\chi2(247) = 3.717$, $p < .05$. Individuals reporting SNS use at work reported being late to work or school more often than would have been expected, $\chi2(247) = 7.381$, $p < .01$. Individuals reporting SNS use at work reported that their SNS use negatively impacted their sleep more than would have been expected, $\chi2(247) = 5.817$, $p < .05$.

Participants that reported meeting a friend via an SNS were more likely those who had not made a friend that way to report experiencing relationship problems as a result of SNS use, $\chi2(247) = 11.465$, $p = .001$. Participants that reported meeting a significant other via an SNS were more likely those who had not started a relationship that way to report experiencing relationship problems as a result of SNS use, $\chi2(247) = 6.861$, $p < .05$. Individuals that reported posting false information about themselves on their SNS account were more likely those who did not engage in that behavior to report being late for work or class as a result of SNS use, $\chi2(247) = 16.764$, $p < .001$. Individuals that reported posting false information about themselves on their SNS account were more likely than would have been expected to report experiencing sleep problems as a result of SNS use, $\chi2(247) = 11.150$, $p = .001$. Individuals that reported posting false information about themselves on their SNS account were more likely than would have been expected to report attempting to cut back on their SNS use, $\chi2(247) = 5.220$, $p < .05$. Individuals that reported using a false name on an SNS account were more likely those who did not engage in that behavior to report being late for work or class as a result of SNS use, $\chi2(247) = 11.735$, $p < .01$.

The aggregate variable, indicating the number of modified abuse/dependence criteria an individual endorsed was significantly related to several of the social networking use characteristics variables. Individuals that used SNSs at work had significantly higher scores on the aggregate item than those who do not access SNSs at work, $F(1, 245) = 14.156$, $p < .001$. Individuals that had a history of posting false information on their SNS account had higher aggregate scores, $F(1, 245) = 7.403$, $p < .01$. Individuals that had a history of holding an SNS account under a false name had higher aggregate scores, $F(1, 245) = 17.965$, $p < .001$. Lastly, individuals that reported meeting a friend through use of SNSs had higher aggregate scores, $F(1, 245) = 5.406$, $p < .05$.

Social networking use characteristics and time allocation. No social networking use variables were found to significantly relate to the time allocation data when entered into ANOVAs with allocation data as independent variables.

Social networking use characteristics and factors of social networking site use. Participants that reported meeting a friend through SNS use had higher scores on the first factor of the SNUQ, $F(1, 245) = 8.087$, $p < .01$. Participants that reported meeting a significant other through SNS use had higher scores on the fifth factor of the SNUQ, $F(1, 245) = 3.949$, $p < .05$. Individuals that reported a history of posting false information on their SNS account had higher scores on the first, second, and fourth SNUQ factors: $F(1, 245) = 9.165$, $p < .001$, $F(1, 245) = 21.877$, $p < .001$, and $F(1, 245) = 11.751$, $p = .001$, respectively. Individuals that reported a history of using a false name on their SNS account had higher scores on the first, second, and third SNUQ factors: $F(1, 245) = 5.035$, $p < .05$, $F(1, 245) = 5.031$, $p < .05$, and

F (1, 245) = 5.060, $p < .05$, respectively. Individuals that report accessing SNSs via their mobile phones had a higher score on the third SNUQ factor, F (1, 245) = 4.534, $p < .05$.

     Social networking use characteristics and the Personality Assessment Inventory. The first and second internal structure components of the PAI were significantly related to a several social networking use characteristics. Those who reported a history of posting false information on their SNS account had higher scored on the first and second components: F (1, 217) = 3.990, $p < .05$ and F (1, 217) = 16.886, $p < .001$, respectively. Individuals that reported meeting a friend through an SNS had higher scores on the first and second components: F (1, 217) = 5.5440, $p < .05$ and F (1, 217) = 8.068, $p < .01$, respectively. Individuals that reported meeting a significant other through an SNS had higher scores on the first and second components: F (1, 217) = 7.026, $p < .01$ and F (1, 217) = 5.772, $p < .05$, respectively. Those who reported accessing SNSs while at work had higher scores on the first and second internal structure components of the PAI: F (1, 217) = 5.730, $p < .05$ and F (1, 217) = 12.348, $p < .01$, respectively.

     Pathological social networking use characteristics. Due to the unequal sample sizes with some of the pathological SNS use items statistical analyses were included to make sure that necessary assumptions of the data were met. When ANOVAs were used, Levine's test of homogeneity of variance was conducted to assure that the variables did not have significantly different variance. Those ANOVAs are not considered robust with the discrepancy in variance and thus are not reported here as significant.

     Pathological use and hours of use. Individuals reporting SNS use interference with academics reported significantly more hours of use during weekdays, $F(1, 245) = 9.651$, $p < .01$ and during weekends $F(1, 245) = 7.093$, $p < .01$. Those

indicating academic problems using SNSs an average of 7.48 hours (SD = 4.87) during

weekdays and 4.96 hours (SD = 3.80) during weekends compared to those not reporting

interference with academics using 5.52 hours (SD = 4.30) during weekdays and 3.64

hours (SD = 3.43) during weekends. Those individuals that reported sleep problems as a

result of SNS use reported significantly more use during weekdays, $F(1, 245) = 5.449$,

$p < .05$. Those indicating sleep problems used SNSs an average of 7.52 hours (SD = 4.87)

during the weekdays, compared to those not reporting sleep problems using an average of

6.12 hours (SD = 4.57).

     Pathological use and time allocation. No pathological SNS use variables were

found to significantly relate to the time allocation data when entered into ANOVAs with

the time allocation data as the independent variable.

     Pathological use and factors of social networking use. Individuals that reported

academic problems as a result of their SNS use scored significantly higher on the first

and third SNUQ factors: $F(1, 245) = 5.070$, $p < .05$; $F(1, 245) = 17.525$, $p < .001$,

respectively. Individuals that reported being late to work or school due to SNS use

scored significantly higher on the first and third SNUQ factors: $F(1, 245) = 21.307$,

$p < .001$ and $F(1, 245) = 13.667$, $p < .001$, respectively. Individuals that reported

relationship problems as a result of their SNS use scored significantly higher on the first

and fourth SNUQ factors: $F(1, 245) = 10.096$, $p < .01$ and $F(1, 245) = 4.388$, $p < .05$,

respectively. Individuals that reported spending more time on SNSs than originally

intended during any given session scored significantly higher on the third SNUQ factor,

$F(1, 245) = 25.885$, $p < .001$. Individuals that reported sleep problems as result of SNS

use scored significantly higher on the first, second, third, and fourth SNUQ factors:

$F(1, 245) = 11.068, p = .001; F(1, 245) = 9.079, p < .01; F(1, 245) = 40.880, p < .001;$

$F(1, 245) = 18.865, p < .001$, respectively.

Of the individuals that reported attempting to cut back on their use of SNSs there were significant differences between those who reported experiencing withdrawal symptoms (irritability, tension, and mood swings) during their attempt to cut back compared to those who did not cut back and those who did not experience such withdrawal symptoms for the second SNUQ factor, $F(2, 244) = 4.334, p < .05$. Post-hoc analyses (Bonferroni), indicated that those who reported experiencing the withdrawal symptoms scored significantly higher on the second SNUQ factor compared to those who did not experience such withdrawals and among those who did not attempt to cut back on their usage of SNSs ($p < .05$ and $p < .05$, respectively).

Of the individuals that reported attempting to cut back on their use of SNSs there were significant differences between those who reported successful reduction in hours of use compared to those who did not cut back and those who were unsuccessful in their attempts to reduce use for the first, third, and fourth SNUQ factors: $F(2, 244) = 8.437,$ $p < .001; F(2, 244) = 10.268, p < .001; F(2, 244) = 9.027, p < .001$, respectively. Post-hoc analyses (Bonferroni), indicated that those who reported failed to successfully cut back on hours of SNS use scored significantly higher on the first SNUQ factor compared to those who were successful in such a reduction and among those who did not attempt to cut back on their usage of SNSs ($p < .001$ and $p < .05$, respectively). Those who reported failed to successfully cut back on hours of SNS use scored significantly higher on the second SNUQ factor compared to those who were successful in such a reduction and among those who did not attempt to cut back on their usage of SNSs ($p = .001$ and

$p < .01$, respectively). Those who reported failed to successfully cut back on hours of SNS use scored significantly higher on the third SNUQ factor compared to those who were successful in such a reduction and among those who did not attempt to cut back on their usage of SNSs ($p < .001$ and $p < .001$, respectively). Those who reported failed to successfully cut back on hours of SNS use scored significantly higher on the fourth SNUQ factor compared to those who were successful in such a reduction and among those who did not attempt to cut back on their usage of SNSs ($p < .001$ and $p < .001$, respectively). Those who reported failed to successfully cut back on hours of SNS use scored significantly higher on the fifth SNUQ factor compared to those who were successful in such a reduction ($p < .05$).

The aggregate variable of pathological use was significantly ($p < .001$), meaningfully ($r^2 \geq .10$), and negatively correlated with the third SNUQ factor ($r = -.352$).

Pathological use and the Personality Assessment Inventory. Individuals that invalidated their PAI profiles due to an extreme response tendency were significantly more likely than those with valid PAI profiles to report having turned down social invitations in order to use SNSs, $\chi2(242) = 7.491$, $p < .01$. Respondents with invalid PAI profiles were significantly more likely than those with valid profiles to report experiencing relationship difficulties due to their usage of SNSs, $\chi2(242) = 13.857$, $p < .001$. Additionally, individuals that invalidated their PAI profiles due to an extreme response tendency were more likely than those with valid PAI profiles to report spending more time than originally intended using SNSs, $\chi2(242) = 17.059$, $p < .001$.

Participants that reported relationship problems as a result of their SNS use scored significantly higher on the first and fourth PAI internal structure components:

$F(1, 217) = 12.156$, $p < .001$ and $F(1, 217) = 7.900$, $p < .01$, respectively. Of the individuals that reported attempting to cut back on their use of SNSs there were significant differences between those who reported experiencing withdrawal symptoms (irritability, tension, and mood swings) during their attempt to cut back compared to those who did not cut back and those who did not experience such withdrawal symptoms for the first and second PAI internal structure components: $F(2, 216) = 9.583$, $p < .001$; $F(2, 216) = 5.261$, $p < .01$, respectively. Post-hoc analyses (Bonferroni), indicated that those who reported experiencing the withdrawal symptoms scored significantly higher on the first and second PAI internal structure components ($p < .001$ and $p = .001$, respectively) compared to those who did not experience such withdrawals and among those who did not attempt to cut back on their usage of SNSs.

While there were significant ($p < .05$) correlations between the aggregate pathological use variable and PAI scales and internal structure components, none of these correlations met the meaningfulness criteria of explaining 10% of the variance.

Additional analyses with hours of reported social networking site use. Individuals' reported number of hours spent on SNSs during week days and weekends were entered into correlational analyses with the time allocation, SNUQ factors, and internal structure components of the PAI. While some statistically significant correlations were present, none met the meaningfulness criteria of explaining at least 10% of the variance.

Additional time allocation analyses. No significant/meaningful correlations were found between the use allocation data and the factor scores of the SNUQ or the PAI.

Factors of Use and the Personality Assessment Inventory

The SNUQ factor scores were then entered into analyses to determine the relationship between the factors of use and PAI personality dimensions. Individuals that produced invalid PAI profiles and those reporting extreme levels of SNS use were excluded from these analyses. Only the fifth factor proved to be significantly ($p < .001$) and meaningfully ($r^2 \geq .10$) correlated with any of the PAI scales. Factor five was positively correlated with depression ($r = .465$), paranoia ($r = .315$), schizophrenia ($r = .453$), borderline ($r = .327$), and non-support ($r = .379$). Factor five was negatively correlated with treatment rejection ($r = -.349$), dominance ($r = -.317$), and warmth ($r = -.319$). Please see Table 5 for r values.

Table 6. Correlation Matrix of SNUQ Factors and PAI Scales

	SNUQ Factor 1	SNUQ Factor 2	SNUQ Factor 3	SNUQ Factor 4	SNUQ Factor 5
Somatic Complaints	.078	.059	-.070	.145*	.191*
Anxiety	.146*	.042	.060	.271*	**.304***
Anxiety-Related Disorders	.084	.062	.060	.211*	.292*
Depression	.135*	.160*	.032	.238*	**.465****
Mania	.154*	.105	.057	.132	.086
Paranoid	.103	.177*	.050	.239*	**.315****
Schizophrenia	.161*	.225*	.062	.224*	**.453****
Borderline	.145*	.158*	.069	.237*	**.327****
Antisocial Features	.022	.120	.012	.086	.122
Alcohol Problems	.110	.112	.184*	.183*	.117
Drug Problems	.045	.016	.052	.071	.058

*significant at $p < .05$, ** significant at $p < .001$ and meaningful at $r^2 \geq .10$

Table 6. Cont.

	SNUQ Factor 1	SNUQ Factor 2	SNUQ Factor 3	SNUQ Factor 4	SNUQ Factor 5
Aggression	.067	.141*	.048	.169*	.205*
Suicidal Ideation	.056	.088	-.032	.086	**.305***
Stress	.077	.127	.010	.084	.182*
Non-support	.135*	.149*	.059	.133*	**.379****
Treatment Rejection	-.158*	-.245*	-.089	-.258*	**-.349****
Dominance	-.144*	-.153*	-.110	-.244*	**-.317****
Warmth	-.052	-.154*	-.050	-.112	**-.319****

*significant at $p < .05$, ** significant at $p < .001$ and meaningful at $r^2 \geq .10$

The subscales associated with those scales with which factor five meaningfully and significantly correlated were also examined through correlation. The depression subscales related to cognitive, affective, and physiological symptoms of depression were significantly and meaningfully correlated with the fifth factor: $r = .386$, $p < .001$; $r = .507$, $p < .001$; and $r = .318$, $p < .001$, respectively. None of the paranoid subscales reached the meaningful criteria for correlation with the fifth factor. The schizophrenia subscales of psychotic experiences and social detachment significantly and meaningfully correlated with the fifth factor: $r = .360$, $p < .001$ and $r = .513$, $p < .001$, respectively. The borderline subscale of affective instability significantly and meaningfully correlated with the fifth factor, $r = .339$, $p < .001$.

Using the factor scores derived from the confirmatory analysis of the SNUQ and the four components from the PAI found to fit the present sample, a correlation matrix was done. The only significant ($p < .001$) and meaningful ($r^2 \geq .10$) correlations occurred between the fifth SNUQ factor and the first and second PAI component. Please see Table 6 for r values.

Table 7. Correlation Matrix of SNUQ Factors and PAI Internal Structure Components

	PAI Component 1	PAI Component 2	PAI Component 3	PAI Component 4
SNUQ Factor 1	.147*	.105	-.148*	.078
SNUQ Factor 2	.095	1.84*	-.237*	.075
SNUQ Factor 3	.029	.042	-.098	.107
SNUQ Factor 4	.258*	.160*	-.252*	.136*
SNUQ Factor 5	.359**	.296*	-.483**	.096

*significant at $p < .05$, ** significant at $p < .001$ and meaningful at $r^2 \geq .10$

Using the factor scores derived from the confirmatory analysis of the SNUQ and the four components from the PAI found to fit the present sample, another factor analysis was completed. Using Kaiser's criterion and an oblique promax rotation, three components were extracted. The factor solution explained 67.455% of the variance in the present sample. Please see Table 7 for loadings. None of the three factors significantly correlated with one another.

Table 8. Standardized Loadings for Three-Factor Model

	Factor 1	Factor 2	Factor 3
SNUQ Factor 1	**.765**	.017	.009
SNUQ Factor 2	**.578**	-.123	**.346**
SNUQ Factor 3	**.837**	.071	-.257
SNUQ Factor 4	**.739**	.049	.189
SNUQ Factor 5	**.347**	-.040	**.698**
PAI Component 1	-.105	**.663**	**.424**
PAI Component 2	-.075	**.696**	.298
PAI Component 3	.112	-.034	**-.847**
PAI Component 4	.172	**.887**	**-.339**

CHAPTER IV

DISCUSSION

Confirmatory Factor Analysis of the Social Networking Use Questionnaire

The present study sought to replicate the factors influencing SNS use previously found through EFA of the SNUQ. The researcher successfully accomplished a confirmation of the SNUQ as a reliable measure of SNS use. The structure of the factors influencing undergraduate female use of SNSs was found to be stable across academic years. A five-factor model was replicated from previous research with the factors being: first, keeping in touch with friends; second, emphasis on the importance of being popular and having more friends than others; third, gaining information about others; fourth, use for emotional regulation; and fifth, comfort in/preference for online interpersonal interaction compared to face-to-face interaction. Thus, among college-aged women, these five factors influencing SNS use appear to clearly exist across two different samples.

Personality Assessment Inventory

Personality Assessment Inventory validity. Approximately 12% of the completed PAI administrations were invalid based upon elevated scores on one or more of the four validity scales. The number of invalid profiles was found to be related to the speed with which participants completed the entire battery of questionnaires. Those participants with invalid PAI profiles completed the battery in significantly shorter periods of time and had a much more truncated range of completion times. These data suggest that the most likely explanation for the majority of the invalid profiles had to do

70

with rapid completion of the PAI questionnaire resulting in inadequate consideration of item content and/or attempting to answer questions randomly. The PAI questionnaire was the fourth of five questionnaires included in the battery. The researcher believes the fill-in-the-blank format of the first two questionnaires, which were shorter in length, were more likely to be completed accurately. Additionally, the SNUQ findings replicated a previous study, suggesting that it was completed accurately. Thus, the length of the PAI likely fatigued some participants and they attempted to rush through the items, rather than withdraw, in order to receive their extra credit.

Individuals with invalid PAI profiles due to an extreme response tendency were more likely than those with valid PAI profiles to report having turned down social invitations in order to access their SNS accounts. Individuals with invalid PAI profiles were more likely than those with valid profiles to report experiencing relationship difficulties due to their SNS use. Additionally, individuals that invalidated their PAI profiles were more likely to report spending more time than originally intended on their SNS accounts. Thus, if these individuals that completed the battery quickly completed the other questionnaires accurately, those who invalidated the profiles were more likely to have several pathological use characteristics.

Personality Assessment Inventory internal structure. An additional goal of the study was to further support the use of the PAI in a college sample by showing the replicable nature of the measure's internal structure in the present sample. It was hypothesized that the current female undergraduate sample would demonstrate a pattern similar to the two-factor model (see below) that has been found in previous research, with

a factor for internalizing disorders and one for externalizing disorders (Hopwood &
Moser, 2011; Hoelzle & Meyer, 2009; Morey, 2003).

The exploratory factor analysis performed on the present sample's PAI profiles
produced a four-factor model, and this solution was rotated to clarify the loadings. While
the PAI did not reduce into two simplistic components, as the existing literature would
suggest, this may have been due sample effects. The present sample was limited to the
female gender, while existing literature focuses on both men and women in their samples.
The relative health of the present sample should also be taken into account as the sample
was made up of university students that are of substantial enough mental health and
stability to be enrolled in courses and participating in extra credit activities. The previous
samples were of mixed gender college students from larger university samples, which
would account for a greater representation of differing functioning levels and more
diverse life circumstances. Additionally, the present sample is extremely limited in its
ethnic diversity, a variable that existing literature has accounted for in their analyses.
Despite these differences in samples, however, and the differences in complexity of
solutions, the distinction between internalizing and externalizing symptoms, so strongly
indicated in prior analyses, is also apparent in the current analysis. Moreover, the disr two
factors to merge reflect this distinction, indicating the relative importance of this
distinction to the latent structure of the test.

The present factor solution showed a first factor with large loadings of
stereotypical internalizing disorders (somatic problems, anxiety, and depression). The
first factor also had a meaningful, negative loading with antisocial features, suggesting a
lack of acting-out behavior, consistent with internalizing disorders. Additionally, warmth

72

was a meaningful personality loading, suggesting that such internalizing individuals may focus on pleasing others and outward appearances.

The second factor had large loadings on more stereotypical externalizing disorders (mania, paranoia, and antisocial features). The second factor also contained loadings on treatment-relevant scales suggesting the presence of stress, lack of social support, and a dominant personality which may be extrapolated to demonstrate a relationship between the difficulty inherent in coping with negative consequences that may occur as a result of externalizing behaviors and resultant difficulty in maintaining interpersonal support. The second factor had a meaningful loading for suicidal ideation, possibly suggesting the capability of or desensitization to violence against the self. Factors one and two had some overlap between schizophrenia, borderline personality features. The researcher's interpretation of this overlap has to do with the potential for both cognitive (internal) and behavioral (external) difficulties associated with these types of symptoms.

The third factor was related to treatment indicators with high loadings on treatment rejection, dominance, and warmth characteristics. Smaller loadings on the third factor indicated a greater degree of social support and negative relationships with depressive and psychotic symptoms. Thus interpersonal warmth, confidence, and adequate interpersonal support are negatively associated with mood difficulties and psychotic symptoms, as would be expected. The treatment rejection variable indicates the individual's likelihood to refuse treatment due to a lack of identification of psychological difficulties, and thus it is highly correlated with positive treatment outcomes, in that such

healthy individuals (as are found in the present sample) will not see themselves as needing therapy.

The fourth factor appeared to be a secondary externalizing factor as it had high loadings related to alcohol and drug use as well as antisocial features. Antisocial features would include law breaking associated with illicit drug use and with abuse of substances, thus it is fitting for the antisocial features variable to be meaningfully loading. No other loadings on the fourth factor were meaningful.

The four factors were meaningfully correlated with one another, suggesting that high scorers on the internalizing factor tended to also score highly on externalizing disorders. Those scoring high on internalizing variables were also likely to score highly on variables measuring substance use. High externalizing scorers were also likely to score highly on substance use variables. Those scoring highly on internalizing variables demonstrated a meaningful tendency toward less favorable treatment indicators.

Demographics of the Sample

The sample in the present study appeared to be representative of the female University of North Dakota student population. The average age and ethnic makeup of the sample appeared, anecdotally, to correspond to the composition of the campus as a whole. There was a slight skew to the data, with more first- and second-year students, due to the heavy population of these years in the Psychology department courses that offer remuneration in extra credit points.

Access to Social-Networking-Capable Devices and the Internet

All but three of the participants were regular users of SNSs. All students sampled had a mobile phone that was capable of accessing the internet, while only just over half

74

used their mobile phone to access their SNS accounts through available applications. Nearly all students (approximately 94%) owned their own computers and thus can use the computer to access their SNS accounts. Approximately 95% had access to the internet in their current place of residence, and approximately 80% had had internet access in the home in which they were raised. Such statistics confirm the ubiquity of the internet in our society and especially as a part of the daily life of a university student. These data also suggest a certain level of socioeconomic status among those individuals attending the University of North Dakota, in that nearly all individuals surveyed were able to afford such mobile phones, computers, and internet subscription services and came from home with access to the internet and thus likely had technology with which to access the internet.

Hours of Social Networking Use

There was great variability in the average number of hours reportedly spent on SNSs among the sample. The calculated means suggest that UND students are accessing their SNS accounts for nearly eight hours during the week and about five and a half hours over the weekend, which corresponds well to the existing literature on SNS use (Ellison et al., 2007; Pempek, Yermolayeva, & Calvert, 2009; Ross et al., 2009). A small number of participants reported excessive use, as defined by the degree of use beyond the standard deviations of the sample. These excessive users reported accessing their SNS accounts for 30 hours or more during the week and 20 hours or more on the weekends. This extreme use is akin to having these individuals log on to their SNS accounts for more time than they would through full-time employment. Approximately 30% of the sample reported accessing their SNS accounts while at work, with an average of nearly

two and a half hours daily. The degree of use among the present sample is great and would suggest the importance of SNSs in the daily lives of college students. Employers of university students would be wise to be aware of the degree of SNS use that can occur on the job and to regulate its use if warranted.

Time Allocation of Social Networking Use

Individuals reported spending the greatest percentage of their time on SNS accounts viewing others' profiles, collecting information about others rather than communicating with them. The second most popular activity was looking at information communicated to them by others. The third most popular activity was communicating with others through a variety of available mediums. This pattern of SNS use is fitting, given the findings of the confirmatory factor analysis of which the first three factors were communicating with friends, focus on the self and popularity, and looking at information about others without communicating. In essence, the allocation questionnaire created by the researcher reconfirmed information regarding factors influencing SNS use by showing a relationship between the reasons individuals report as influencing their use and their reported behavior.

Non-Clinical Variables of Social Networking Use

Non-clinical variables were collected regarding behaviors and trends in SNS use that did not relate directly to the modified substance abuse/dependence criteria. Nearly half of the sample reported making a friend via SNS use, rather than through face-to-face interaction. This phenomenon seems self-explanatory, as making friends and meeting mutual friends is a major component of the SNSs. Facebook offers suggestions of individuals with whom you have mutual friends and suggests that you become their

friend as well. A much smaller percentage (approximately 10%) of the sample reported having met a significant other through SNS use rather than through face-to-face interaction. It is difficult to infer much information from this 10%, as one is unable to determine the way in which an individual may have interpreted this question, as they may have indicated that they initially began interacting with an acquaintance through an SNS before getting to know them through face-to-face interaction. A seemingly large percentage of participants reported posting false information and using a false name on SNS accounts; though, again, it is difficult to determine the nature with which the participants interpreted these questions. For example we cannot be sure if these respondents posted false information purposefully or perhaps posted a "white lie" about something in order to preserve or enhance a relationship.

Pathological Social Networking Use

Eight adapted DSM-IV-TR substance abuse/dependence criteria were used to assess pathological SNS use. Ten percent or fewer individuals reported declining social invitations to use SNSs or experiencing withdrawal symptoms (irritability and tension) when attempting to cut back on SNS use. Thus we can determine that these adapted criteria of abandoning of social activities for use and physiological/psychological withdrawal are not common among most SNS users. Approximately 16% of the sample reported experiencing relationship difficulties with friends, family, or significant others as a result of their SNS use. The interpretation of this result may have to do with the degree of the individual's use, the content of their postings, their "friending" strategies, etc. Approximately 10% reported being made late to work or class due to their SNS use while approximately 90% reported spending more time than originally intended using the

sites. Thus, while the great majority of the sample was able to recognize the ability of their use behavior to expand beyond its intended limits, a much smaller proportion felt that their use interfered with important life responsibilities. Over two thirds of the sample (approximately 70%) reported previous attempts to cut back on their SNS use, with only 35% of these individuals describing these attempts as successful. Approximately two thirds of individuals surveyed reported experiencing academic problems as a result of SNS use. Almost half of the sample reported that their SNS use negatively impacted their sleep. Thus, the negative impact of SNS use on sleep, academics, and time management were not variables that helped to greatly differentiate individuals in the sample. An aggregate variable was created in an attempt to create a composite score for abuse/dependence criteria, to obtain an understanding at what point the combination of criteria use becomes pathological.

Relationships between Social Networking Use and Other Variables

      Year in school. A significant main effect was found between hours of use and the year of school of the individual. While no significant differences were found between specific groups, the general trend was for first- and second-year students to report greater hours of SNS use. Additionally, first-year students showed higher rates of internet access in their homes of origin. This trend of more hours of SNS use among the younger female students may be a result of cohort effects, given that the internet, home computers, and SNSs have all become increasingly more available and affordable as technology expands. Also of note for the rural communities from which many University of North Dakota students hail, internet connectivity would have been increasingly available within recent years as technology infrastructure has improved. Inevitably, these changes in

78

affordability, availability, infrastructure, and role of technology during participants'

childhoods would have an impact on how these individuals currently use this technology.

      Internet access in the home of origin. Individuals that reported growing up in

homes without access to the internet were more likely to have met a significant other

through an SNS than would have been expected. The individuals that report meeting a

significant other through SNSs may find the change in their level of internet access to be

liberating or may result in a greater interest in using SNSs for interpersonal relationships.

Those that grew up with access to the internet in their homes were more likely than those

without such access to use the instant chatting features on SNSs. Individuals with internet

access in their home of origin had higher scores on the externalizing disorder component

of the PAI compared to those without such access as children. The differences between

those with childhood internet access and those without it may be related to how the

individual learned to cope with stressors. The finding that individuals with childhood

internet access are more likely to use the chatting function on their SNS account, may

support the idea of difficulty in delay of gratification that may be a common thread

between individuals with childhood internet access and those with externalizing

disorders.

      Internet access in the current residence. Individuals that did not have access to

the internet in their current residences were more likely to have a history of posting false

information on their SNS accounts. Additionally, individuals without access to the

internet in their current residence had significantly higher scores than those with such

access on the SNUQ factors related to concern about their number of online friends and

use of an SNS for emotional regulation. These factors influencing use may suggest

potential reasoning behind posting of false information: to improve one's mood and/or to impress others. The individuals without current internet access scored lower on indicators of treatment (the third PAI internal structure component) and scored higher on the externalizing PAI component than did those with current access. Such a pattern may suggest that these individuals without access to the internet may "act out" through externalized behaviors, which is fitting with the finding of higher scores on the emotion-regulation factor on the SNUQ. Their elevation on the PAI treatment indicator component suggests they are more amenable to treatment, suggesting that they are not overly domineering or warm and are more able to be vulnerable and forthcoming. These individuals may show poorer psychological adjustment and engage in a number of behaviors when distressed, including acting out offline and on SNS accounts. Their tendency to regulate emotions through SNS use would appear to be related to the significant stock they put in their online popularity.

Social networking use at work. Individuals that reported accessing their SNS accounts while at work were more likely to have made a friend through SNS use rather than through a face-to-face interaction. The individuals using SNSs at work may allow SNSs to play a larger role in their lives and thus may make friends off of the websites, they may also spend more time without directed activity ("surfing") on SNSs, allowing for them to browse through friends of friends and make new SNS-based acquaintances. These individuals accessing their SNS accounts at work were more likely to report relationship, sleep, and academic problems as a result of their SNS use. They also reported a being late to work or class due to their use. Again, such findings suggest that work-SNS users have greater difficulty with regulating their use across life

circumstances. These difficulties may suggest poor delay of gratification, lack of discipline, and abuse of SNSs that may show itself particularly through accessing their SNS accounts in inappropriate situations.

Mobile phone social networking access. As might be expected, individuals that reported accessing their SNS accounts via mobile phone applications reported a greater number of hours of SNS use during the week, thus confirming one of the researcher's original hypotheses. These individuals with mobile SNS access were more likely to be made late to work or class as a result of SNS use; this is somewhat ironic, given the likely intent of the mobile applications to allow an individual to take the SNS account wherever they need to go. Respondents that access SNSs via mobile phones had higher scores on both the internal and external components from the PAI, suggesting greater levels of a multitude of symptoms among this group.

Pathological use variables. Many different relationships were found between non-clinical use variables, demographic variables, SNUQ factors, and PAI internal structure components and the pathological use variables.

Academic problems due to social networking use. As might be expected, individuals reporting academic problems related to SNS use reported accessing the sites for significantly more hours on both weekdays and weekends compared to those without such academic problems. Academic problems related to SNS use were reported more frequently by individuals that owned their own computer than would have been expected given the sample distribution. Individuals that accessed SNS accounts at work were more likely to report academic problems than would be expected. These findings relating to academic problems as a result of SNS use suggest that having one's own computer

increases your access to SNSs and thus increases the potential for problematic or pathological use. Those reporting SNS-related academic problems scored significantly higher on the SNUQ factors related to maintaining relationships and gathering information about others. One way to interpret these findings is to suggest that the SNUQ factors of gathering information and maintaining relationships are rather vague and would allow for a great deal of time to be spent attempting to achieve these goals, without tangible benchmarks for completion. Thus, more time may be wasted in these pursuits and the potential for negative impact on time management and academics is possible.

Conversely, academic problems related to SNS use was reported less frequently by fifth-year students than would have been expected. Thus, being in your fifth year of school may be a protective factor from SNS-related academic problems due to the cohort effect hypothesized above, due in part to less familiarity with and lesser importance placed upon SNS use.

Sleep problems as a result of social networking use. As might be expected, those reporting sleep problems as a result of SNS use reported accessing these sites for more time during weekdays. Individuals that report accessing their SNS accounts at work reported sleep problems as a result of SNS use, more than what would be expected. Individuals that reported sleep problems related to SNS use were more likely to have engaged in posting false information on their SNS accounts than would have been expected. Individuals reporting sleep problems due to SNS use had higher scores on the SNUQ factors related to maintaining relationships, the importance of number of friends, gaining information about others, and use for emotion regulation. These findings suggest

that individuals that accessing SNS sites at work, those individuals with more hours of use, those willing to post false information, and those describing multiple factors influencing their SNS use are all characteristics that could lead one to expect that such an individual does not effectively manage her time. Again, several of the SNUQ factors are those vague and non-specific tasks, while use for emotion regulation also may make SNS use quite variable, depending a great deal on the individual's mood. Additionally, the SNUQ factor related to concern about popularity and the number of friends could lead to preoccupation with impression management and getting and keeping friends, such that a great deal of time is spent on the account or stress is felt when not accessing the site, potentially interfering with sleep.

   Relationship problems as a result of social networking use. Individuals that report accessing SNS accounts at work reported relationship problems as a result of SNS use, more so than what would be expected. Individuals with relationship problems as a result of SNS use reported, more frequently than would be expected, making friends and significant others through SNS use. Individuals reporting relationship problems due to SNS use had higher scores on the SNUQ factors related to maintaining relationships and use for emotion regulation. Individuals reporting relationship problems due to SNS use had higher scores on the PAI components related to internalizing disorders and alcohol and drug use. These findings paint the picture of individuals that are accessing SNS accounts to increase their social interaction. These individuals are looking for social support, even if it is coming from online rather than face-to-face sources. These individuals appear to experience more symptoms of anxiety and depression and likely they tend to use alcohol and drugs, like SNS use, to regulate emotions.

Spending more time than intended on social networking use. Individuals reporting spending more time than originally intended accessing their SNS accounts had higher scores on the SNUQ factor related to gaining information about others. This finding supports previous hypotheses made by the researcher suggesting that the SNUQ factor lends itself to losing track of time and poor time management.

Late for work or class as a result of social networking use. Individuals that reported being made late to work or class due to their SNS use were less likely to have a history of "addictive" behavior or psychological treatment than what would have been expected. These findings suggest that, as expected, individuals with a history of counseling or addictive behaviors do not necessarily have greater difficulties with managing their SNS use. Individuals that reported accessing their SNS accounts at work were more likely to be late to work or class than would have been expected. Individuals that reported being late due to SNS use reported posting false information or using a false name on their SNS accounts more frequently than would have been expected. Individuals reporting lateness as a result of SNS use scored significantly higher on those SNUQ factors related to maintaining relationships and gathering information about others. These findings suggest that these individuals allow their SNS use to negatively impact their time management in such a way that it impacts important life responsibilities. As hypothesized above, the two SNUQ factors related to the lateness are again those factors that lead to losing track of time due to a never-ending possibility of tasks. Along with this impact on responsibilities the tendency to be less truthful is present. However, it appears that this group of people was less likely to report a history of diagnosis or psychological treatment.

Attempts to cut back on social networking use. Individuals that reported attempts to cut back on SNS use were more likely to have engaged in posting false information on their SNS accounts than would have been expected. Individuals that reported experiencing withdrawal symptoms during an attempt to cut back on SNS use had higher scores on the SNUQ factor related to the importance of number of friends on their SNS accounts. Those that reported experiencing withdrawal symptoms during their attempt to reduce SNS use scored higher on PAI components related to internal and external disorders. Those individuals that were unsuccessful in their attempts to cut back on SNS use had higher scores on the SNUQ factors related to maintaining relationships, the importance of number of friends, gaining information about others, use for emotion regulation, and use to accommodate social anxiety. These findings suggest that those that attempted to cut back on SNS use unsuccessfully reported higher levels of all five SNUQ factors influencing use. Those reported withdrawal symptoms had more symptomology across internalizing and externalizing disorders. Those experiencing withdrawal symptoms also tended to report the factor influencing use that relates to the importance of the number of friends, a comparison between self and others, which may make the draw of the site greater as it is a competition.

Aggregate variable. Individuals that reported owning their own computer had higher scores on the aggregate pathological use variable. Individuals that had high scores on the aggregate variable were more likely to be accessing SNS accounts at work. Individuals that reported meeting a friend through SNS use had higher aggregate scores. And those individuals that reported posting false information and using a false name on their SNS accounts had higher scores on the aggregate variable. There was a significant

85

relationship between the aggregate variable score and the score on the SNUQ factor

related to gaining information about others. This focus of SNS use on finding

information about others suggests that such great interest in others may lead to neglecting

of personal needs and further resulting in more negative life consequences due to SNS

use. These findings suggest individuals with computers and those demonstrating more

access (at work) to SNS accounts showed greater impairment by SNS use than would be

expected given the distribution of the sample. Additionally, those who were willing to

post false information or use a false name on their accounts were more likely to have

more pathological use symptoms, which are fitting given the lying/deceit variables'

similarities to antisocial personality criteria.

Hypotheses Regarding Social Networking Use Questionnaire Factors

It was hypothesized that the first factor (Maintaining Contact) would correspond

to fewer significant pathological symptoms of SNS use. This factor did correlate with a

number of pathological variables (lateness, unsuccessfully cutting back, relationship

problems, and sleep problems) though it was not significantly related to the aggregate

variable. This lack of significant relationship was hypothesized because the first factor

represents the stated purpose of SNSs and thus most individuals surveyed likely use

SNSs at least in part for this reason. However, through attempting to explain its role in a

number of pathological variables, this ubiquitous factor may be more problematic than

originally hypothesized, as individuals who score highly on it may have difficulty

managing the time they spend on SNS accounts due to the potentially never-ending

nature of the task of maintaining friendships through such sites, leading to being late to

school, work, or bed. Additionally, such a strong focus on maintaining relationships

online could feasibly lead to difficulties with offline relationships with friends, family, and significant others. Fittingly, individuals scoring highly on this first factor were more likely to have reported meeting a friend through their SNS use and they were more likely to have posted false information on their SNS accounts.

Another hypothesis was that the second and third factors (Social Comparison and Information Gathering), would relate to pathological symptoms that had to do with interpersonal difficulty. This was hypothesized as these two factors suggest the use of SNSs to amass information and friends, without a focus on the interaction that the sites intend. Information gathering was positively related to a number of different pathological variables (lateness, more time than intended, unsuccessfully cutting back, sleep problems, and academic problems) and positively correlated with the aggregate variable, suggesting the pathology associated with that factor influencing use. Individuals scoring highly on the third factor were more likely to access their SNS account via their mobile phone a previously discussed indicator of increased use. These individuals were also more likely to have used a false name on their SNS accounts. The social comparison factor was related to withdrawal symptoms, unsuccessfully cutting back, sleep difficulties, and academic problems. Individuals scoring highly on this second factor were more likely to have posted false information or used a false name on their SNS accounts, which may have been done to increase appeal to potential friends. Thus, this hypothesis was not confirmed; if it had been true, one would have likely seen the relationship problems pathological variable associated with these SNUQ factors.

It was also hypothesized that the fourth and fifth factors (Negative Emotion Regulation and Social Discomfort) were likely to have the most significant relationships

with the pathological symptoms of SNS use. This was expected because the items loading

these factors imply reliance on SNSs to compensate for coping deficits, a reliance that

may have the potential to lead to pathological use. This hypothesis was not supported, as

these two SNUQ variables had the fewest related pathology variables. The emotion

regulation factor was related to relationship difficulties, sleep difficulties, and

unsuccessfully cutting back on use. Individuals scoring highly on this fourth factor were

more likely to have posted false information on their SNS accounts. The social

discomfort factor was only related to unsuccessfully cutting back on use. Individuals

scoring highly on this fifth factor were more likely to report having met a significant

other through their SNS use, which is fitting given that these individuals were

hypothesized to have greater comfort in online interactions.

Relationship between Social Networking Use and Pathology variables and the Personality Assessment Inventory

Individuals scoring highly on the first component of internalizing disorders were

more likely to report a history of posting false information on their SNS accounts. They

also were more likely to report meeting a friend or significant other. They were more

likely to access their SNS accounts via their mobile phones. These individuals were more

likely to report experiencing withdrawal symptoms during an attempt to reduce SNS use

and more likely to report relationship problems as a result of SNS use. These findings

suggest a general tendency toward greater use and experiencing of some negative

consequences related to their SNS use. Individuals scoring highly on the second

component, related to externalizing disorders, were more likely to report a history of

posting false information on their SNS accounts. They also were more likely to report

meeting a friend or significant other. They were more likely to access their SNS accounts

via their mobile phones. These individuals were more likely to report experiencing withdrawal symptoms during an attempt to reduce SNS use. These findings do not differ greatly from those found for the internalizing component. No significant relationships were present for the third component related to treatment indicators. Individuals scoring highly on the fourth component were more likely to report experiencing relationship difficulties as a result of SNS use. Thus overall, no great relationships existed between the PAI internal components and SNS use variables, allowing for little differentiation among the behaviors based on personality traits.

Factors Influencing Social Networking Use and the Personality Assessment Inventory

The final research question looked to examine the relationship between the SNUQ factors and the T scores for scales of the PAI. It was hypothesized that the first SNUQ factor (communication and interaction with friends) would have fewer correlates with the PAI scores due to the ubiquitous nature of this factor influencing SNS use. The first factor did not significantly and meaningfully correlate with the PAI subscales or the PAI components, and it had some of the lowest correlations among those that were significant but not meaningful. Thus, this null hypothesis is generally confirmed.

It was also hypothesized that the fourth and fifth SNUQ factors (Negative Emotion Regulation and Social Discomfort) would correlate with more PAI scores due to the description of psychological difficulties inherent in the functions themselves. Additionally, it was hypothesized that the fifth factor (Social Discomfort) would correlate with the PAI factor of internalizing disorders, given the presence of anxiety in the function's description. The fifth SNUQ factor of social discomfort was positively related

to symptoms of depression, paranoia, psychosis, borderline personality, and lack of social support. The fifth factor was negatively related to treatment rejection, dominance, and warmth. Within these symptom areas, the fifth factor positively correlated with cognitive/affective/physiological symptoms of depression, social detachment, and affective instability. The fifth factor had a positive relationship to the internalizing disorder component of the PAI structure and a negative relationship to the treatment indicators component of the PAI. The fourth factor of emotion regulation did not have any significant and meaningful correlations with PAI scales. The fourth factor did significantly (but not meaningfully) positively correlate with the internalizing, externalizing, and alcohol and drug components of the PAI and negatively correlate with the treatment indicators component. Thus, this hypothesis was partially confirmed in that the fifth SNUQ variable was associated with a variety of PAI-defined axis I and II symptomology, particularly the internalizing disorders, with is most fitting with the anxious nature inherent in the item descriptions.

The hypothesis was also made that the second factor (Social Comparison) would correlate with the PAI factor of externalizing disorders, as it suggested properties of lack of reciprocity and the potential for shallow or instrumental interpersonal relationships. While there was a significant correlation, it did not appear meaningful.

The exploratory factor analysis that examined the underlying structure of the PAI components and SNUQ factors resulted in a three-factor model. The first factor had meaningful loadings from all the SNUQ factors with the largest loadings occurring for the communication, information-gathering, and emotional regulation SNUQ factors. It is hypothesized that this first factor is indicative of broad SNS use, with greater emphasis

90

on the socially acceptable and most widely endorsed factors leading to use. The second factor had large loadings from the PAI internalizing and externalizing factors as well as the substance use factor. It is hypothesized that this factor represented overall pathology in the sample. The most descriptive factor was the third, which included high scores on the social discomfort SNUQ factor, moderate scores on the internalizing disorder component and the popularity SNUQ factor, and very low scores on treatment indicators. Additionally, this factor included low scores on alcohol/drug use. This third factor is hypothesized to represent the overlap between infrequent (and potentially pathological) factors influencing SNS use and poor treatment indicators. Interestingly, these potentially pathological and difficult-to-change variables were negatively associated with substance use.

Limitations of the Present Study

The present study was conducted on a group of students that was skewed in several demographic variables. More first- and second-year students made up the sample than what would be representative of the University of North Dakota population. While the present sample's lack of ethnic diversity is representative of the University of North Dakota population, the present sample is not highly generalizable to other universities with greater diversity. Additionally, the present study was conducted online and thus individuals were able to take the measures unsupervised and thus it is more difficult to determine the amount of time and attention the participants paid to the questionnaires. Some of the analyses would have been stronger and more reliable had the sample sizes in the various variable groups been more equal. Thus, greater recruitment of those who fit

certain variables (e.g., not owning their own computer) could help to better ascertain these variables' relationships with factors of SNS use and personality variables.

Conclusion and Future Directions

The factor structure of the SNUQ was successfully replicated by the study and indicates potential use as a measure assessing factors influencing use of SNSs. The measure was additionally supported by the parallel nature with which the SNUQ factors paralleled the most highly rated behaviors (behaviors in which participants were most likely to engage). To improve upon the current findings, future research should looking into creating greater nuance in additional items that address the five replicated factors. Additionally, continued validation through additional samples; for example a more ethnically diverse sample or samples of non-college student adults or high school students. These additions would help to further validate the content and the generalizability of the SNUQ as a descriptive measure. The SNUQ could potentially be used in certain psychological treatment settings to better understand the function behind the individual's use of the site to direct potential interventions to reduce use or reduce the negative impact of the use. Anecdotally, counseling centers are seeing more problematic use of SNSs or the creation of additional psychological distress from the SNS use of their students. A measure such as the SNUQ could provide descriptive information for clinicians that could be a starting point for discussions with clients about the factors influencing their use and how they might meet these needs in manners that are less potentially-distressing.

Pathological SNS use appears to be linked with several types of variables assessed. Those individuals that accessed SNS accounts via their mobile phones or at

work were among those with the most negative outcomes related to SNS use and greater number of hours spent on such sites. In terms of reasons for SNS use (SNUQ) the factor related to gathering information about others, rather than communicating with others, had the greatest number of associations with adapted abuse/dependence criteria and the aggregate variable. Additionally, those individuals using SNSs in order to monitor their popularity among others tended to have greater pathology in SNS use behaviors. Combined these two variables suggest that when the SNS use is primarily focused on others, self-care may reduce and more negative consequences may occur as a result. Those reporting SNS use due to social discomfort had the greatest number of personality correlations, suggesting greater symptomology and clinical pathology related to SNS use due to social anxiety.

When analyzing the PAI components and the SNUQ factors, one factor was found that appeared to signify a general pathology variable with high scores on the social discomfort factor of the SNUQ and moderate scores on the internalizing and externalizing factors, with poor treatment indicators. In future studies with potentially greater nuance in the SNUQ scores, there could be greater interaction between the SNUQ factors and the PAI scales/components.

Overall, the study was able to address proposed hypotheses and examine relationships between many demographic variables, SNS use variables, pathological SNS use variables, factors influencing SNS use, and clinical constructs. Some hypotheses were supported while others were not sufficiently proven. The study suggests great potential for the SNUQ as a measure of factors influencing SNS use.

APPENDICES

Appendix A

Demographics Questionnaire Items

What is your age?

What is your year in school?

How do you define your ethnicity?

Do you own a computer?

Do you own a cellular phone that has access to the internet?

Did the home you grew up in have access to the internet?

Do you have access to the internet in your current place of residence?

Have you ever been diagnosed with a psychological problem or received psychological counseling/therapy?

Have you ever been psychologically or physically addicted to a substance or behavior (e.g., alcohol, marijuana, meth, gambling, etc.)?

Appendix B

Social Networking Site Investment Questionnaire Items

During an average week (Monday through Thursday) how many hours do you spend visiting social networking sites?

During an average weekend (Friday through Sunday), how many hours do you spend visiting social networking sites?

Have you ever declined a social invitation for no other reason than to spend time on social networking sites?

Have you ever had problems studying, completing homework, or with declining grades because of time spent on social networking sites?

Have you ever been late for class or work because of social networking sites?

How often are you late for class or work because of social networking sites?

Has your use of social networking sites caused problems in your relationships with friends or family?

Have you ever met a friend through social networking sites?

Have you ever met a significant other through social networking sites?

Have you ever posted or communicated false information about yourself through social networking sites?

Have you used a false name when using social networking sites?

Have you ever spent more time than you originally meant to on social networking sites?

Have you ever used social networking sites at the expense of your sleep?

Have you ever attempted to cut back on the time you spend on social networking sites?

If you have attempted to cut back, did you experience any of the following symptoms: feeling irritable, tense, unhappy, etc.?

If you have attempted to cut back, was the attempt successful in the long-run?

How long have you had an account on Facebook?

Do you use Facebook on your mobile phone?

Are you able to look at Facebook while at work?

If you are able to look at Facebook while at work, how many hours in an average work day do you spend on Facebook?

Appendix C

Social Networking Site Use Questionnaire Items

I check my personal pages often to see if someone has sent me a message.

I do not get on social networking sites when my friends are around.

I especially like to log onto my site when I feel down or upset.

I carefully make sure that anything I post about myself and any pictures of me on the social networking site make me look good.

Good relationships require that you keep in frequent contact with someone.

I feel much more comfortable flirting with someone online than I do flirting with someone in person.

I check to see how many friends or contacts my friends have online.

I am amazed by the weird and crazy things people post on their personal pages.

I don't know which is better: telling others about myself online or finding out what other people are up to.

I find myself on social-networking sites when I get bored.

If I've had a really bad day, I like to feel better by logging onto my site.

I like to post things on my personal page for my friends to look at.

I check my social networking site frequently because I worry about being out of the loop.

I often have more fun with my friends online than I do when we are together.

I feel especially good when I know I have more on-line friends than someone else does.

I find it entertaining to visit other peoples' personal pages to see what they have posted.

I like to message or chat with individuals online, even if they are not my close friends.

I use social networking sites when I am bored and need something to do.

When life gets to be too much, I like to escape by logging onto my site.

I update my site often so that others can see what I've been up to.

I have many more meaningful friendships because of my social networking account than I would if I did not have the account.

If I have bad news, I am more comfortable posting that information online than I am conveying it face to face.

I frequently check to see how many people have visited my site.

I like to look at my friends' personal pages even if I do not plan to message them.

I really enjoy the sense of connection I get interacting with other people through social networking sites.

I usually log onto my site when I feel bored.

I use social networking sites to forget about my own problems.

If I do something special, I post it as soon as possible so everybody will know about it.

I need to log on often, so that friends don't lose track of me and I don't lose track of them.

It is easier to contact my friends online than to call them on the phone.

I keep track of how many times my friends comment on other peoples' pages relative to mine.

I use social networking sites to find out information about other people.

I update my profile and use other applications on my social networking site account in order to start conversations and interact with others.

I would rather watch a really good movie or television show than get on a social-networking site.

My friends often tell me that they like looking at what I post online.

I use social networking sites to stay in touch with my friends.

It's much easier to make friends on-line than in person.

I keep track of the number of friends or contacts I have online.

I use social networking sites to find out what others are doing.

I use social networking sites to contact my friends and interact with them.

When I'm desperate for something to do, that's when I'll often log onto my site.

People who have unflattering pictures or outdated information on their accounts are less popular or less well-liked.

If I did not have a social networking account I would lose touch with my friends.

Messaging my friends online is the best way to stay in contact with them.

It makes me feel really good to see my total number of friends increase.

I use social networking sites to make sure I'm up to date on the lives of my friends and others.

People like to visit my personal page.

When people visit my site, I want them to be very impressed right away.

If I don't log on to my site for a while, I start to worry that I am missing something important.

On-line is really the only place I feel comfortable communicating with other people.

It's very important that I have as many friends on-line as possible.

I would rather look at other people's pages than interact with them on-line.

People without social networking accounts are missing out on maintaining their friendships.

Sometimes, I feel uncomfortable talking to people in the real world.

People with more friends on social networking sites are more popular than those with fewer friends.

Appendix D

Time Allocation Questionnaire Items

Please Rank the Following Activities from 1 to 10, with one being the activity you spend the most time participating in during average social networking site log-in, and 10 being the activity you spend the least time doing.

Do not rank two activities with the same number, even if you believe that you spend an equal amount of time on them, assign each number 1 through 10 only once.

Browsing own photos

Changing your information/photos

Posting on own profile (comments, status, links, photos, notes, etc.)

Writing to others (walls, messages)

Reading/browsing information about or photos of others (not posting)

Playing games, using applications by self

Playing games, using applications with others

Chatting with friends online through a social networking site

Looking for new friends

Creating, managing, or browsing groups and/or events

REFERENCES

American Psychiatric Association. (2000). *Diagnostic and Statistical Manual* (4th ed.). Arlington, Virginia: American Psychiatric Association.

American Psychiatric Association. (2000). Diagnostic and Statistical Manual of Mental Disorders. *4th, Text Revision*. Arlington, Virginia: American Psychiatric Association.

Amichai-Hamburger, Y., & Ben-Artzi, E. (2003). Loneliness and internet use. *Computers in Human Behavior, 19*, 71-89.

Back, M., Stopfer, J., Vazire, S., Gaddis, S., Schmukle, S., Egloff, B., & Gosling, S.D. (2010). Facebook Profiles Reflect Actual Personality Not Self-Idealization. *Psychological Science, 21*(3), 372-374.

Blais, M. A. (2010). The common structure of normal personality and psychopathology: Preliminary exploration in a non-patient sample. *Personality and Individual Differences, 48*, 322-326.

Bonebrake, K. (2002). College students' internet use, relationship formation, and personality correlates. *CyberPsychology & Behavior, 5*(6), 551-557.

Buffardi, L. E., & Campbell, W. K. (2008). Narcissism and social networking web sites. *Personality and Social Psychology Bulletin, 34*, 1303-1314.

Cheung, C., Chiu, P., & Lee, M. (2011). Online Social Networks: Why students use Facebook. *Computers in Human Behavior, 27*(4), 1337-1343.

Christofides, E., Muise, A., & Desmarais, S. (2012). Hey mom, what's on your Facebook? Comparing Facebook disclosure and privacy in adolescents and adults. *Social Psychology and Personality Science, 3*(1), 48-54.

Correa, T., Hinsely, A. W., & de Zúñiga, H. G. (2010). Who interacts on the Web?: The intersection of users' personality and social media use. *Computers in Human Behavior, 26*, 247-253.

Debatin, B., Lovejoy, J. P., Horn, A.-K., & Hughes, B. N. (2009). Facebook and online privacy: Attitudes, behaviors, and unintended consequences. *Journal of Computer-Mediated Communication*(15), 83-108.

Ellison, J.M. (2009). *Projective Personality Assessment Based on Superpowers: An exploration of investment in fantasy media and personality styles.* (Unpublished master's thesis). University of North Dakota, Grand Forks.

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), 1143-1168.

Everitt, B. (1975). Multivariate analysis: The need for data and other problems. *British Journal of Psychiatry, 126*, 237-240.

Facebook. (2010). *Statistics.* Retrieved July 1, 2010, from Facebook: http://www.facebook.com/#!/press/info.php?statistics

Facebook. (2012). *Statistics.* Retrieved January 22, 2012, from Facebook: http://www.facebook.com/#!/press/info.php?statistics

Gonzales, A., & Hancock, J. (2011). Mirror, Mirror on my Facebook Wall: Effects of exposure to Facebook on self-esteem. *Cyberpsychology, Behavior, and Social Networking, 14*(1-2), 79-83.

Gorsuch, R. (1983). *Factor Analysis* (2nd ed.). Hillsdale, New Jersey: Erlbaum.

Gosling, S., Augustine, A., Vazire, S., Holtzman, N., & Gaddis, S. (2011). Manifestations of Personality in Online Social Networks; Self-reported Facebook-related behaviors and observable profile information. *Cyberpsychology, Behavior, and Social Networking, 14*(9), 483-488.

Hamburger, Y., & Ben-Artzi, E. (2000). The relationship between extraversion and neuroticism and the different uses of the internet. *Computers in Human Behavior, 16*, 441-449.

Hoelzle, J. B., & Meyer, G. J. (2009). The invariant component structure of the Personality Assessment Inventory (PAI) Full Scales. *Journal of Personality Assessment, 91*(2), 175-186.

Hopwood, C. J., & Moser, J. S. (2011). Personality Assessment Inventory internalizing and externalizing structure in college students: Invariance across sex and ethnicity. *Personality and Individual Differences, 50*, 116-119.

Howell, D. C. (2007). *Statistical Methods for Psychology* (6th ed.). United States of America: Thomson Wadsworth.

Hu, L. & Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equqation Modeling, 6*(1), 1-55.

Hughes, D., Rowe, M., Batey, M., & Lee, A. (2012). A tale of two sites: Twitter vs. Facebook and the personality predictors of social media usage. *Computers in Human Behavior, 28*(2), 561-569.

Jankowski, D. (2002). *A beginner's guide to the MCMI-III.* Washington D.C.: American Psychological Association.

Kalpidou, M., Costin, D., & Morris, J. (2011). The relationship between Facebook and the well-being of undergraduate college students. *Cyberpsychology, Behavior, and Social Networking, 14*(4), 183-189.

Karl, K., Peluchette, J., & Schlaegel, C. (2010). Who's posting Facebook faux pas? A cross-cultural examination of personality differences. *International Journal of Selection and Assessment, 18*(2), 176-186.

KIein, E. (2010, October 10). A Story Bigger than Facebook. *The Washington Post.* Retrieved from http://www.washingtonpost.com.

Krämer, N. C., & Winter, S. (2008). Impression management 2.0: The relationship of self-esteem, extraversion, self-efficacy, and self-presentation within social networking sites. *Journal of Media Psychology, 20*(3), 106-116.

Krueger, R., & Tackett, J. (2003). Personality and Psychopathology: Working toward the bigger picture. *Journal of Personality Disorders, 17*(2), 109-128.

Livingstone, S. (2008). Taking risky opportunities in youthful content creation: Teenagers' use of social networking sites for intimacy, privacy and self-expression. *New Media Society, 10*, 393-411.

Markon, K.E. (2005). Hierarchies in the structure of personality traits. *Social and Personality Psychology Compass, 3*(5), 812-826.

Manago, A. M., Graham, M. B., Greenfield, P. M., & Salimkan, G. (2008). Self-presentation and gender on MySpace. *Journal of Applied Developmental Psychology*(28), 446-458.

McCrea, R. R., & Costa, P. T. (1997). Personality trait structure as a human universal. *American Psychologist, 52*, 509-516.

Mehdizadeh, S. (2010). Self-presentation 2.0: Narcissism and self-esteem on Facebook. *Cyberpsychology, Behavior, and Social Networking, 13*(4), 357-364.

Mikami, A. Y., Szwedo, D. E., Allen, J. P., Evans, M. A., & Hare, A. L. (2010). Adolescent peer relationships and behavior problems predict young adults' communication on social networking sites. *Developmental Psychology, 46*(1), 46-56.

Miller, J.C., Weatherly, J., Terrell, H., & Ellison, J.M. *Motivations for use of and Addiction to Gaming and Social Networking.* (Unpublished manuscript). University of North Dakota, Grand Forks.

Millon, T. (1996). Disorders of Personality: DSM-IV and beyond (2nd ed.). New York: Wiley & Sons, Inc.

Miniwatts Marketing Group. (2010). *Usage and Population Statistics*. Retrieved June 15, 2010, from Internet World Statistics: http://www.internetworldstats.com/stats.htm

Mittal, V. A., Tessner, K. D., & Walker, E. F. (2007). Elevated social Internet use and schizotypal personality disorder in adolescents. *Schizophrenia Research, 94*, 50-57.

Moore, K., & McElroy, J. (2012). The influence of personality of Facebook usage, wall postings, and regret. *Computers in Human Behavior, 28*(1), 267-274.

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

Moreno, M., Jelenchick, L., Egan, K., Cox, E., Young, H., Gannon, K., et al. (2011). Feeling bad on Facebook: Depression disclosures by college students on a social networking site. *Depression and Anxiety, 28*(6), 447-455.

Morey, L. C. (2003). *Essentials of PAI Assessment.* (A. S. Kaufman, & N. L. Kaufman, Eds.) Hoboken, NJ: John Wiley & Sons.

Muise, A., Christofides, E., & Desmarais, S. (2009). More information than you ever wanted: Does Facebook bring out the green-eyed monster of jealousy. *CyberPsychology and Behavior, 12*(4), 441-444.

Muthén, L.K. and Muthén, B.O. (2010). *Mplus User's Guide*. (6th ed.). Los Angeles, CA: Muthén & Muthén.

Orr, E., Sisic, M., Ross, C., Simmering, M., Arseneault, J., & Orr, R. (2009). The influence of shyness on use of Facebook in an undergraduate sample. *CyberPsychology and Behavior, 12*(3), 337-340.

Raacke, J., & Bonds-Raacke, J. (2008). MySpace and Facebook: Applying the uses and gratifications theory to exploring friend-networking sites. *CyberPsychology and Behavior, 11*(2), 169-174.

Rigdon, E.E. (1996). CFI versus RMSEA: A comparison of two fit indices for structural equation modeling. *Structural Equation Modeling*, 3, 369-379.

Rosenberg, J., & Egbert, N. (2011). Online Impression Management: Personaltiy traits and concerns for secondary goals as predictors of self-presentation tactics on Facebook. *Journal of Computer-Mediated Communication, 17*, 1-18.

Ross, C., Orr, E., Sisic, M., Arseneault, J., Simmering, M., & Orr, R. (2009). Personality and motivations associated with Facebook use. *Computers in Human Behavior, 25*(2), 578-586.

Ruiz, M. A., & Edens, J. F. (2008). Recovery and Replication of Internalizing and Externalizing Dimensions Within the Personality Assessment Inventory. *Journal of Personality Assessment, 90*(6), 585-592.

Ryan, T., & Xenos, S. (2011). Who uses Facebook? An investigation into the relationship between the Big Five, shyness, narcissism, loneliness, and Facebook usage. *Computers in Human Behavior, 27*, 1658-1664.

Sacchetti. (2007). XX. In *Online Social Networking* (pp. 143-146).

Steinfield, C., Ellison, N., & Lampe, C. (2008). Social capital, self-esteem, and use of online social network sites: a longitudinal analysis. *Journal of Applied Developmental Psychology, 29*, 434-445.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics* (5th Edition ed.). Boston: Allyn & Bacon/Pearson Education.

The Nielsen Company. (2009, September 24). *Nielsen reports 17 percent of time spent on the internet in August devoted to social networking and blog sites, up from 6 percent a year ago.* Retrieved July 1, 2010, from Nielsen: http://blog.nielsen.com/nielsenwire/wp-content/uploads/2009/09/InternetSpend_SocialNetworks.pdf

The Nielsen Wire. (2010, August 2). What Americans Do Online: Social media and games dominate activity. Retrieved July 1, 2010, from Nielsen: http://blog.nielsen.com/nielsenwire/wp-content/uploads/2010/08/SocialMedia_GamesDominate.pdf

The World Bank. (2012, February 13). *Data Catelog: World Development Indicators.* Retrieved February 13, 2012, from The World Bank: http://www.google.com/publicdata/explore?ds=d5bncppjof8f9_&ctype=l&strail=false&bcs=d&nselm=h&met_y=it_net_user_p2&scale_y=lin&ind_y=false&rdim=region&idim=country:MEX:CAN:USA:IND:RUS:GBR:JPN:CHN&ifdim=region&tdim=true&tstart=-311882400000&tend=1266040800

United States Census Bureau. (2012, February 14). *US & World Population Clocks*. Retrieved February 21, 2012, from Census.gov: http://www.census.gov/main/www/popclock.html

Yu, C. Y. (2002). *Evaluating cutoff criteria of model fit indices for latent variable models with binary and continuous outcomes* (Doctoral dissertation). Los Angeles , UCLA.