THE INTERSECTION OF ONLINE SOCIAL NETWORKING AND EMOTIONAL PSYCHOPATHOLOGY

by

BIRMAGIDRA MARIE GAINOR

(Under the Direction of Diane Cooper)

ABSTRACT

The focus of this study was assessing what association may exist between excessive use of online social networking and selected emotional psychopathology generally expressed in relationships. This study determined how online social networking affected college students due to the method in which they are interacting with others. It also sought to establish if higher levels of use of online social networking negatively affects forming of offline social networks. Various measures were administered to determine correlations between excessive online social networking and psychopathology.

INDEX WORDS: Online social networking, Psychopathology, Depression, Anxiety, Social Phobia, Internet, College students
THE INTERSECTION OF ONLINE SOCIAL NETWORKING AND EMOTIONAL PSYCHOPATHOLOGY

by

BIRMAGIDRA MARIE GAINOR
B.A., Clemson University, 1995
M.A., Clemson University, 2001
M.Ed., Clemson University, 2003

A Dissertation Submitted to the Graduate Faculty of The University of Georgia in Partial Fulfillment of the Requirements for the Degree

DOCTOR OF PHILOSOPHY

ATHENS, GEORGIA

2010
THE INTERSECTION OF ONLINE SOCIAL NETWORKING AND EMOTIONAL PSYCHOPATHOLOGY

by

BIRMAGIDRA MARIE GAINOR

Major Professor: Diane Cooper
Committee: Edward Delgado-Romero
Pamela Paisley
Alan Stewart

Electronic Version Approved:

Maureen Grasso
Dean of the Graduate School
The University of Georgia
August 2010
DEDICATION

This dissertation is dedicated to a few people, for different reasons. For Grandma, who has always supported my education and encouraged me to talk about events in my life. Mom and Dad – I’m not sure how I would made it through this without you. Your support, in multiple ways, has always been invaluable. I think you knew, from day one of college, that I’d end up here. Adam – you certainly got more than you signed on for. You believed in me when sometimes I didn’t believe in myself. Four years later, I can say we made it.
ACKNOWLEDGEMENTS

There are so many people who have affected my academic career; I’m going to try and go in chronological order. Dr. Mark Charney – thanks so much for teaching me what graduate school was able so I could proceed successfully while adjusting from undergrad to graduate school. Dr. Martin Jacobi – for encouraging me to pursue my passion and smoothing the way to switching majors in graduate school (who does that?). Dr. Tharon Howard – thank you for teaching me that I could be a good writer (7 revisions later); I just had to let go of old habits and beliefs. Dr. Don Keller – I appreciate the example you set of an academic and a clinician; your lessons have lasted well over these years. Dr. Raquel Contreras – you said I’d go back to graduate school again; thank you so much for not saying I told you so and instead supporting me with all of your considerable resources. Dr. George Atkinson – thank you for imagining such a big future for me. Dr. Edward Delgado-Romero – from interview to internship, you have always treated me like a colleague and friend. Having you in my corner means I can take on the world. Dr. Diane Cooper – I know beyond the shadow of a doubt that you recognized the work we could do together when I met with you during interviews; I don’t think anyone had a better advisor than I did. Could not have done it without you. Dr. Alan Stewart – your patience and graciousness in helping me understand concepts completed this dissertation. I thank you from the bottom of my heart. Dr. Pam Paisley – you worked to keep me grounded through this process and remember who my audience truly is: all those who work with students.
# TABLE OF CONTENTS

**ACKNOWLEDGEMENTS** ................................................................................................................................. v

**LIST OF TABLES** ............................................................................................................................................. viii

**CHAPTER**

1  **INTRODUCTION** ........................................................................................................................................... 1

   Statement of the Problem ............................................................................................................................... 3

   Purpose of the Study ..................................................................................................................................... 7

   Main Research Inquiry ................................................................................................................................. 8

   Research Questions ..................................................................................................................................... 10

   Operational Definitions ............................................................................................................................... 15

   Behavioral Addiction ................................................................................................................................. 17

   Research Delimitations ............................................................................................................................... 18

2  **REVIEW OF RELEVANT LITERATURE** ....................................................................................................... 19

   History of Social Communication ............................................................................................................. 19

   Communication on the Internet ............................................................................................................... 26

   Discussion of Pathology Related to Internet Use ...................................................................................... 28

   College Students Utilizing the Internet ..................................................................................................... 33

3  **METHODOLOGY** ......................................................................................................................................... 38

   Data Collection .......................................................................................................................................... 38

   Instrumentation .......................................................................................................................................... 39

   Data Analysis ............................................................................................................................................. 41
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>RESULTS</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>Demographics</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>Statistical Power Analysis</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>Research Questions and Results</td>
<td>49</td>
</tr>
<tr>
<td>5</td>
<td>CONCLUSION</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>Statement of the Problem</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>Statement of Procedures</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>Research Hypotheses Used</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>Discussion</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td>Implications</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>Limitations</td>
<td>78</td>
</tr>
<tr>
<td></td>
<td>Recommendations for Further Research</td>
<td>79</td>
</tr>
<tr>
<td></td>
<td>REFERENCES</td>
<td>84</td>
</tr>
<tr>
<td>APPENDICES</td>
<td>Internet Misuse Assessment Questionnaire</td>
<td>92</td>
</tr>
</tbody>
</table>
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Demographic Information (N=329)</td>
<td>48</td>
</tr>
<tr>
<td>2</td>
<td>Analysis of Sex Differences between Specific Online Social Networking Activities</td>
<td>50</td>
</tr>
<tr>
<td>3</td>
<td>Analysis of Racial Group Differences between Specific Online Social Networking Activities</td>
<td>51</td>
</tr>
<tr>
<td>4</td>
<td>Analysis of Classification Differences between General and Specific Online Social Networking Activities</td>
<td>53</td>
</tr>
<tr>
<td>5</td>
<td>Analysis of Variance for Online Social Networking</td>
<td>55</td>
</tr>
<tr>
<td>6</td>
<td>Goodness-of-fit Calculated between Measures of Psychopathology, Online Social Networking, and Offline Friendship Development</td>
<td>57</td>
</tr>
<tr>
<td>7</td>
<td>Intercorrelations between Measures of Internet Addiction, Depression and Anxiety</td>
<td>59</td>
</tr>
<tr>
<td>8</td>
<td>Relationships between Measures of Internet Addiction, Depression and Anxiety Analyzed by Sex</td>
<td>60</td>
</tr>
<tr>
<td>9</td>
<td>Analysis of Variance of Measure Results Between Sexes</td>
<td>61</td>
</tr>
<tr>
<td>10</td>
<td>Chi Square Examination of Time Spent Online Between Sexes</td>
<td>62</td>
</tr>
<tr>
<td>11</td>
<td>Statistically Significant Findings from Research Questions</td>
<td>63</td>
</tr>
</tbody>
</table>
Chapter 1

Introduction

The introduction of technology to society and culture results in immeasurable changes to the evolution of the society. Ages are often identified by the technology that most directly affects them (e.g. Bronze Age, Industrial Age, etc) because the marker on how a society shifts from the previously held science, beliefs, and mores can be directly tied to the changes in how a society is able to experience the world. Humans are driven to always improve through increasing efficiency and obtaining a higher quality of living (c.f. The Lifespan by G.R. Lefrancios for a discussion on humanity’s drive to change). This improvement irrevocably alters the landscape upon which humankind exists, bringing with it new problems that have to be acknowledged, researched, and assimilated. Because humans are by nature adaptable, the character of human existence sometimes changes with large advances in fields important to human societal development. When technological advances are made in communication, human relations alter in ways that cannot be undone. Strides in utilization of technology, and its inherent changes to communication, have caused the path of human communication to alter (Tidwell & Walther, 2002). Growth along these lines moves unevenly, but has never progressed in the way it is currently advancing due to the global nature of how humans relate in the 21st century. In the course of just over a decade, worldwide use of the Internet has grown exponentially (Weiser, 2001). Communities and nations were more insular previously, with less effect from cultures with varying viewpoints and behaviors. Global relations
have exposed individuals and societies to influence as near as the next region and as far as the next continent. This outside influence, combined with the influx of actual individuals into the communities who have differing cultural systems and beliefs, cannot help but sway the development of new ways of being in cultures long considered restricted by local or national influence. The Internet has united many societies worldwide with a “universal language” that is shaped by the medium itself (Gammack, 2002). As the speed of development of technology increases, this outside influence rapidly infuses radical shifts of thought and behavior from area to area. When the technology in question involves strides in communication and connectivity, changes are inevitable. Communication has evolved from a physical phenomenon to one driven by computers and the Internet, and the relationship between corporeal humanity and the diaphanous Internet is fascinating and unpredictable. The Internet is stimulating connections and links along all levels of society (Haythornthwaite, 2005).

The intersection of human beings and the Internet is a fascinating phenomenon. The utilization of computers for communication has unquestionably enlarged the evolution of society. While the regular advancement of technology and social psychology has been historically more measureable prior to the introduction of the personal computer, the processing speed of this remarkable machine has exponentially increased how rapidly civilization develops new ways of being. Influence has gone from being a local effect to a global phenomenon. News travels at the speed of light, with the repression of information now being mostly impossible. Senders no longer have control over what information is received during communication (Tong, Heide, Langwell, & Walther, 2008). As a technology, the Internet manages to overhaul itself on a regular, rapid basis;
computer hardware technology upgrades at an unpredictable but exponential rate. With the hardware and software constantly changing, human community on the Internet has shifted from a measurable rate of growth to language and behaviors altering swiftly, before casual users have a chance to possess the new terminology. Contacts are just as likely to occur from hundreds of miles away as are likely to occur right next door. People receive news and information constantly, never having to be out of touch with anyone or “log off” from their preferred accounts. Even in remote areas, individuals maintain contact with the outside world; no man really has to be an island any more. This explosion of unyielding connectedness has a long term, unpredictable effect on how communication will evolve over time. The conflict between the rapid advancement of technology and the forced advancement of human relations (which generally has evolved on a slower scale more reflective of the speed of human processing) seems to foreshadow the development of difficulties. Will the ways people talk change to match the speed at which they can connect with each other? Will the rapid, constant adjustment to the speed of the machine cause a gap where human communication eventually fails to keep up? Research must be done to complement the swift integration of people, communication, and machine. The effects of rapid evolution of connectivity, beyond the millennia-old rate of humanity’s biologically bound evolution, should be studied for significant negative repercussions.

**Statement of the Problem**

The methods of interaction among individuals can be visualized in layers or levels. Communication between individuals has consistently gained dimensions during its development. Humankind started with talking face to face and then added more methods
as language and society have grown more refined. Committing words to paper added a second dimension to discourse, in that people could then communicate over distances.

The development of the telephone injected a third dimension, with real time conversations available to those who could both connect to a phone line and utilize similar technology to communicate. The telephone was a point-to-point communication device anyone could use… it increased regular contact between family, friends, and business associates, especially those who lived too far away to be visited easily in person, and this had the overall effect of strengthening local ties (Bargh & McKenna, 2004).

Society has presence, distance, and time as three axes on which to communicate, but most of this has happened in person-to-person communication. The use of the Internet to communicate, and especially the development of websites and applications focusing on information sharing and collaboration among users, has introduced a fourth dimension into communication: community. Now, more so than ever before, communication can be enlarged to include a limitless amount of people involved in the conversation. This fourth dimension brings with it a host of issues, from the diversity inherent in the commenters to the anonymity that protects individuals from backlash when making comments. Messages are depersonalized, inviting stronger or more uninhibited text and more assertiveness in return (Kiesler, 1984). The Internet allows for a sharing of far more than just words; videos/movies, images, songs, and other creations that represent some facet of a person’s life can be self- (or other-) published within seconds. In addition, a statement or image not properly considered before online publication is no longer restricted to the people who can physically receive the information. Anyone, conceivably, worldwide is able to view and comment on things that may have been intended to be
private or restricted. All of the comments offered up have inherent emotional value, whether from friend or foe, recognizable face or anonymous pundit. The influence of others’ comments on social capital and online reputation is just as important as the information intended for sharing by individuals with an online presence (Tong et al., 2008). An individual’s right to privacy on a medium that inherently has weaker privacy safeguards than previous forms of communication, while appearing to be just as private due to technological advances with encryption, produces a paradox that is not easily solved. This contradiction, like others of its type, can contribute to systematic psychopathology.

As the Internet has made our communications more global, the friend circle of the individual has broadened to include many different types of individuals operating at different capacities in someone’s life. Business contacts may be accessible through online profiles on professional networking sites; those people someone lost contact with in high school may be sending add requests through another more social networking avenue. Contacts may no longer engage in detailed communication, but use more collective means of communication that may lose uniqueness. In e-mail correspondence and text-messaging, forms of address and salutation, opening moves, conversational comments on quotes and so on all generate conventions and variations that mark levels of formality and intimacy (Merchant, 2001).

A conversation can be intimate, instantaneous, across any distance, and with several individuals who have something to contribute. This occurs while lacking the original item that made human discourse more personal and accountable: genuine face to face interaction. In the absence of symbolic nonverbal cues that are essential for discerning
others’ hidden feelings and attitudes, we invariably confront the difficulty of obtaining an accurate knowledge of others’ appraisals of our self-presentations (Zhao, 2005). Without face to face interaction, what emotional components are added (and taken away) from this new four dimensional conversation? What happens when people can identify themselves to dozens of people, all of whom believe that their feedback, their conversation is the most lucid and cogent? With the missing physical connection and the heightened sense of intimacy this four-dimensional contact conveys, how are people affected emotionally and psychologically?

Much material exists about the emotional outcomes of differing types of face to face, print, and telephone communication. *Computer mediated communication* (CMC) exists by a differing set of rules than the forms of communication human society has generally utilized. Computer mediated communication is communication that is facilitated by the use of computer technology or the Internet, and can generally be expressed as communication through electronic networks (cf. Walther, 1996). Utilizing the multiple dimensions of communication all at once causes conversations to have more heft and reach than previous methods. Privacy rules do not apply when conversation can be saved and reproduced; secrecy is really an outdated concept when engaging in CMC. In addition, discourse that was restricted to an exclusive group is now available to the masses. Anyone can put out an opinion on a website, spread gossip about celebrities, or find information on health conditions that used to be accessible only to doctors. Due to the ease of updating and accessing information, certain areas of communication have a rapidly increasing online presence (such as news, health information, journals, music, etc). Due to the nature of using computers, it is possible to engage in many different
activities while spending time online; this leads to an increase in the time spent as ratio of time engaging in life activities as compared to time spent balancing other communication pursuits. As the time spent engaging in communication increased, and people are exposed to both more positive and negative feedback, it can be theorized that individuals experience more negative emotional reactions based on the time exposed. Previous research suggests that use of the Internet can decrease social well-being despite the constructive methods in which it is normally utilized (Moody, 2001). These theories can be evaluated for validity through the examination of time spent online compared to degree of psychopathology in reporting individuals.

**Purpose of the Study**

College students are among the most prolific users of *online social networking*. People engage in online social networking by maintaining relationships and exchanging life details through various online website applications. Sites such as MySpace, Facebook, Bebo, Orkut, and Friendster connect people on a global scale and allow them to share information. These sites provide methods of connection and communication that focus almost solely on the social aspect; they exist to allow people to more easily gain a window into the lives of others with which they share interest. Social network sites enable users to articulate and make visible their social networks (boyd, 2007). As the network of friends surrounding college students grows, the exposure to positive and negative feedback, as well as the amount of time spent engaging in social networking, increases exponentially. Online reputation becomes increasingly important, while anonymity provides cover for making statements that simply would not be made in a face to face conversation (Suler, 2004). Students are still developing personality traits and life
skills due to their ages and stages of life development. They may be more susceptible to emotional upheaval based on the large quantity of feedback offered from their engagement in online social networking.

This study seeks to determine if online social networking affects college students based on the method in which they are interacting with others. It also seeks to establish if higher levels of use of online social networking negatively affects forming of offline social networks. Students who are being negatively affected by their online counterparts may show emotional psychopathology such as symptoms of depression, (social) anxiety, and addiction to the medium. The jeopardy in the immediacy of online communication and the corresponding lack of accountability can lead to momentous negative effects. Combining this with the lack of physical contacts that would moderate offline interaction, one might see development of *pathology* incurred by strongly harmful real life relationships, such as mood disorders (depression, anxiety) or personality disorders (obsessive compulsive behavior, dependent behavior, or borderline behavior). While it is difficult to determine if online social networking is the only cause of pathology, research can verify if the increased use of these tools has a relationship to a decrease in quality of life.

**Main Research Inquiry**

The focus of this study is determining what relationship may exist between excessive use of online social networking and selected emotional psychopathology generally expressed in relationships. Due to the lack of information about how these relationships might look, the study engages in exploratory data analysis to inform further research. It would seem that as students’ use of online social networking increases, the
overexposure to the opinions of others would lead to a reliance on constant feedback from online counterparts. The continuous nature of the possible contacts can cause students to expect ever ready feedback, and any lack of steady positive responses can lead to depressive symptoms through lack of reinforcement. In addition, the need for the constant reinforcement can cause anxiety when such reinforcement is not forthcoming or unavailable. Students who communicate more and more exclusively online compared with offline friends may begin to change their main mode of communication to the sort that is favored on the Internet, negatively affecting how they would interact with offline counterparts. If so, social anxiety may develop through lack of positive feedback from real world relationships when compared to online interactions that produce more positive outcomes.

Many stories exist anecdotally of students entering college and spending the majority of their time online, letting other important life events suffer as online social exchanges become all at once unmonitored and easier to devote large chunks of time. The lack of supervision that is a hallmark of starting college can cause many students (who are still developmentally adolescents) to engage in behaviors with negative outcomes. As most students did not have the same self-limited, unmonitored high speed access to the Internet in high school that they will have in college, it would seem that the chance to engage in discourse online as much as they wish would be a temptation that would be hard to resist. Since many of their past and present friends who may be located in far locations would already have an online presence, it would make sense to utilize online social networking to keep up with them. Students connect virtually with new friends in classes and in living spaces, broadening the network of “friends.” An individual
could gain status and reputation by enlarging these networks, adding both close friends and online acquaintances. In addition, the online networking can allow for these students to continue developing a sense of self through interactions with others, exchanging unique information by utilizing online surveys and resources, and eventually become overwhelmed by the amount of information that is available to peruse. They would gain a voice and chance to increase status based on presented text and editable paragraphs that negates the time needed to build reputation offline. The lure of importance is strong to all—and probably much stronger to a newly minted adult with ideas and fresh forums in which to communicate them.

**Research Questions**

This study utilizes research questions instead of hypotheses based on the very exploratory nature of the data analysis. The answers to these questions may produce tentative hypotheses spurring more research. Results comparing the measure of use of online social networking to various measures of socio-emotional functions should show that the amount of pathology increases with a higher amount of online usage. As individuals shift from utilizing face to face communication and move to a different type of discourse, the rules for engaging in that type of discourse should more directly influence any development of pathology that could be mitigated by the emotional content inherent in offline contact. Ultimately, this research will consider whether excessive use of online social networking could cause measurable changes in socio-emotional functioning.

Research Question 1: Is there a statistically significant difference by sex between amounts of online social networking?
Because of the way the sexes differ regarding communication, men and women will not use online social networking in the same amounts. Based on previous literature, usage patterns between the sexes should reflect not only who communicates more, but who is more likely to utilize the Internet as a convenient method of keeping in contact with others. To properly evaluate social networking by sex, it is important to know which sex uses the medium for the majority of communication.

Research Question 2: Is there a statistically significant difference between how the sexes rate their own amount of online usage compared to others?

Based on the underreporting inherent in self-administered questionnaires, students filling out these measures are likely to say they use less than others around them. The sexes are not likely to report at different levels, as they will both report a moderate or minimal amount of use compared to their counterparts.

Research Question 3: Is there a statistically significant difference by racial group between amounts of online social networking?

Historically, racial groups have had varying access to the Internet. College high speed access would level the playing field, but it is still possible that habits developed before having this open access would show in reporting of amounts of online social networking. Those with less access prior to college are likely to report less usage than those who had more access due to socioeconomics, peer use, etc.

Research Question 4: Is there a statistically significant difference by classification between amounts of online social networking?

College intersects with the emotional and mental development of adolescents into adults. Between the ages of 18-22 (the usual age range of class standings from freshman
to senior), a large amount of maturity is expected to occur. Students who are farther along in their development are likely to scale down social use of the Internet in favor of work-life balance or shifting priorities to more relevant pursuits. Younger students who are developing and maintaining social networks will make that aspect of their lives a higher priority, spending more time engaged in online social networking.

Research Question 5: As online social networking use increases, will offline friendship development decrease?

Research Question 6: Will higher levels of social phobia correlate with lower levels of friends existing offline?

The difference between online communication and face to face communication should facilitate a difference in maintenance of offline and online friends. As an individual becomes more enmeshed in online communication, the effort required to maintain offline relationships may become too intensive when added to the strain of maintaining online relationships. In addition, those with existing social phobia may discover the ease of using online communication when compared to offline communication and chose to maintain online relationships and move away from seeking satisfaction in offline relationships.

Research Question 7: Will higher levels of online social networking usage correlate with results of the measures utilized for Internet addiction, social phobia, anxiety, social anxiety, or depression?

The literature currently in existence about the negative results of maladaptive online behavior examines various psychopathologies that can be related to overuse, such as depression, loneliness, social anxiety, or behavioral addiction. Because of the possible
co-morbidity of these conditions to each other (especially in the existence of addiction with other diagnoses), relationships may exist between the occurrence of some or all of the potential pathologies.

Research Question 8: Will levels of online social networking usage correlate with results on measures of Internet addiction?

Research Question 9: Will levels of online social networking usage correlate with levels of anxiety?

Research Question 10: Will levels of online social networking usage correlate with scores on a measure of depression?

Research Question 11: Will levels of online social networking usage correlate with the user having higher levels of social anxiety or social phobia?

All of these research questions relate to the overarching purpose of the study, to be able to specify the type of pathology that may result from excessive use of online social networking. While high scores on any of these measures may indeed exist in the face of low or normal usage of online social networking, students with excessive use should demonstrate some sort of pathology independent of outside problems unrelated to usage of the Internet.

Research Question 12: Will scores on addiction measures correlate in the same direction in students with anxiety or depression?

Students with symptomology for Internet Addiction would probably suffer from other pathology due to the nature of addiction. These students will most likely identify symptoms of depression or anxiety based on the life disrupting nature of dealing with
overuse of the Internet. The measured effects should be representative of the effects of other types of behavioral addictions, such as gambling, sex, or shopping.

Research Question 13: Do scores on addiction measures differ in amount of correlation between the sexes?

Research has shown that in both physiological and behavioral addictions, the sexes report different amounts of negative usage patterns. In almost all addictions studied, men are found to have more addictive symptoms than women. While the sexes are equally like to use illegal substances when offered, men have more access to illegal substances. Women are more likely to misuse prescription drugs, while men are more likely to use drugs such as marijuana or alcohol. Men and women also prefer different behavioral addictions, with men more likely to be treated for sex addiction and gambling and women more likely to be treated for food addiction. Internet addiction, while classified as a behavioral addiction, bisects several pathological behaviors. The total symptomology should be examined for significant differences between the sexes.

Research Question 14: Is there a statistically significant difference between the sexes on the results of the measures utilized for Internet addiction, anxiety, or depression?

As well as comparing addiction symptomology, it would be useful to examine sex distinctions on the other psychopathology being examined. Research has shown that there are different rates in diagnosis for various psychopathologies. In the general population, men are more likely to be diagnosed with Internet addiction, while women more often seek treatment for social anxiety, general anxiety, and depression. All too often, treatment as indicated is only examined for the group that is most readily identified with a certain diagnosis – anger management focuses on men, while treatment of individuals diagnosed
with borderline personality disorder is couched in language specific to women. Research should, instead, develop treatment recommendations that are tailored to the actual proliferation of an occurrence in the reported population.

Research question 15: Is there a statistically significant difference between hours spent online engaged in online social networking and hours spent online total as reported by respondents (when compared by sex)?

Just as the sexes differ along other measurements, the question exists if the sexes actually reflect any difference between what percentage of hours spent online is reflected in online social networking. Males tend to utilize online social networking less than females, but research up to this point has not focused on how the sexes spend their allotted online hours. This consideration may lead to more targeted treatment when delineated by sex.

**Operational Definitions**

Many of the concepts discussed in this paper involve language specific to computers, the Internet, and related technologies. Others are related to communication or psychology. Common or established definitions for these terms or concepts, with sources where appropriate, are provided as follows. All definitions of psychopathology are taken from the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (2000)*.

Anxiety – the apprehensive anticipation of future danger or misfortune accompanied by a feeling of dysphoria (unpleasant mood) or somatic (physical) symptoms of tension. The focus on anticipated danger may be internal or external.
Social Phobia – marked and persistent fear of social or performance situations in which embarrassment may occur, and exposure to the situation almost invariably provokes an immediate anxiety response.

Depression – loss of interest or pleasure in nearly all activities, accompanied by clinically significant distress or impairment in social, occupation, or other important areas of functioning.

Addiction – dependence behavior that indicates continued use of a substance despite significant substance or behavior related problems. There is a pattern of repeated self-administration that can result in tolerance, withdrawal, and compulsive drug-taking behavior.

Computer Mediated Communication - communication that is facilitated by the use of computer technology or the Internet; communication through electronic networks (Walther, 1996).

Web 2.0 – next generation of the Internet, with websites and applications focused on information sharing and collaboration among users.

Online Social Networking - online maintenance of preexisting social networks; can also be described as individuals and groups connecting based on shared interests, political views, or activities (boyd, 2007).

Disinhibition – engaging in activities in cyberspace that wouldn't ordinarily occur face-to-face; also the act of loosening up, feeling more uninhibited, and expressing one’s self more openly (Suler, 2004).
Behavioral Addiction

A distinction needs to be made here between a physical addiction and behavioral addiction, which is how Internet addiction is generally classified. While a physical addiction, per the definition in the DSM-IV-TR, is most easily identified through physiological symptoms, behavior addiction is recognized by the compulsive engagement in the behaviors despite their maladaptive nature. To be classified as addictions, behavioral addictions should, and do, show common neurobiological foundations with substance addictions. Psychosocial complications, consequences of impaired control, and behavioral salience occur equally in drug or non-drug behavioral addictions and precede drug-specific neuropsychiatric and medical complications, neither of which is essential for the diagnosis to be made (Martin, 2005). Behavioral addicts try to alter their mental state mainly by a behavioral routine such as washing, checking or gambling, without taking any particular chemical (Marks, 1990). Further distinctions should be made between normal repetitive behaviors and behavioral addiction, in order to help identify how negative actions can cross from simply unhelpful to truly harmful. Those who are addicted have a restricted range of substances or activities which will satisfactorily take the place of the addictive substance or activity (Bradley, 1990). Activities can be said to exist on a continuum, with routine actions that result in neutral or positive consequences on one end and destructive outcomes on the other. The proliferation of technology has resulted in new, underexplored behavioral addictions such as overutilization of video games, excessive television watching, overreliance on cell phones or personal digital assistants (PDAs), and overuse of the Internet.
Research Delimitations

The scope of this research is exploratory in nature. The findings of these data are not intended to convey absolute theories about negative behavior, but to suggest directions to continue research. Due to the possibility of concurrent disorders with similar symptoms, other causes for symptoms seen, and preexisting conditions, causality will not be able to be determined. In addition, the results will not be generalizable to the broader population that does not reflect a cultural makeup of the surveyed subset. The college population is not indicative of the demographics of the population of the US; groupings differ through ethnic or racial minority status, socio-economics, average level of education, technological savvy, and so forth. A study that examines pathology generalizable to the entire population would have to include a sample taken across all representative groups of Internet users, reaching individuals who may not be exposed to or understand the negative repercussions on constant Internet usage. When reporting on negative behaviors, the honesty of the surveyed individuals must be assumed. Individuals may tend to misrepresent themselves on self-reported data when the information gathered is deeply sensitive or socially desirable or undesirable (Rasinski, Visser, Zagatsky, & Rickett, 2005). People who are trying to look less likely to have mental difficulty with a common medium may underreport actual use levels, degree of pathology experienced through heavy use, or number of offline social networks they maintain. Any results from studies including self-reports of symptoms and extent of use are likely to be on the low side, with a larger amount of variability in the results just as likely as a much higher ceiling of negative pathology based on higher use levels than are reported. Without observation, corroborating details such as these is very unlikely.
Chapter 2

Review of Relevant Literature

History of Social Communication

Humans are social beings and as such, the concept of social networking is by no means new. Connectivity has long been an aspect of the human condition, with individuals engaging in discourse with each other by various means to exchange information and build bonds. Recorded history documents various means of short and long distance communication between individuals and communities to exchange news and information. History has certainly been altered by a single communication from one individual to another, for example Paul Revere’s ride, John Snow and the removal of the Broad Street pump handle, or Alexander Graham Bell’s call to Thomas Watson. Mass communication and its ability to affect entire nations is even more profound–consider the examples of the Infamy Speech of President Franklin D. Roosevelt, the “I Have a Dream Speech” of Martin Luther King, Jr., and the broadcast of the fall of the Twin Towers in New York City. The evolution of society has been guided in part by the advancement of communication and the ability to convey important messages over longer and longer distances, utilizing more sophisticated means, over shorter time periods. Those who have more ability to consolidate important information more easily amass personal and professional power, and extending reach from local to distant greatly contributes to this. Those who function at the core of contemporary society, be it global or local, participate in dense networks of information, communication, technology, and services. Those on
the periphery are increasingly distanced from these networks, as evidenced by the expansion of technological developments and global markets. Purposeful exclusion can occur with the manipulation of technology by those at the core to reinforce societal divisions (Bryce, 2001). Research suggests that those next to gain access to the Internet will be those considered minorities, with lesser incomes, and lower education levels. Rural residents and the elderly will still suffer from future exclusion in getting access (Howard, Rainie, & Jones, 2001). The expectation among those growing up in the Internet age is that most people have access to modern means of communication, but the rapid proliferation of the Internet can equate to individuals who are underprepared for this level of constant contact.

Pen pals morphed into people employing short wave radios evolved into telephones for distance communication. As technology marched on, contact became further integrated into daily living. Each advance in communication technology caused both positive and negative reactions. Speculators and naysayers were able to contend that new technologies were going to change the face of the world and either reduce human communication, undermine the current government, connect all people and spread world peace, or enlarge global markets. Theories that were appropriate for traditional media do not automatically apply to new media, due to the broader uses of new technology and the multiple dimensions in which these technologies may reside (Williams, 2006). The Internet is accused of promoting the growth of pseudo rather than real communities shearing social networks to produce loners, if not addicts. On the other hand, the Internet allows ideas to circulate to a wide audience, diluting power from traditional elites who monopolize information, and encourage a generally self-reflective society. Most of the
ideas about how the Internet may be good or bad for society are, at best, hypotheses, and it may be the case that many or all of them are true (Howard et al., 2001). It is too early to definitively state one hypothesis over any others; the effect of the Internet on society and communication has not yet peaked. Those who have grown up with the Internet are also going to be in a different location developmentally in relation to positive or negative hypotheses about the effects of the Internet, due to the incorporation of technology into their social evolution. Brignall and Van Valey (2005) examined literature related to development of trends among youth, who are at the forefront of the social digital revolution. Teenage and young adult use of the Internet is different than older counterparts because of the diffusion of the technology into most facets of their daily lives. Older American’s online communication forms are more likely to follow existing communication styles, while the communication that has adapted for Internet use is more prevalent in communication for young people.

The Internet combines the concepts of mass media (common to radio and television) and interaction (common to the telegraph and telephone). As more dimensions of communication were developed through technological breakthroughs, the means of communication changed the world in fundamental ways (Bargh & McKenna, 2004). While technological advances were always predicted to make negative changes in how humans socialize, most literature on previous methods of communication did not bear out the media scare reports. The research related to the Internet proved no different. The positive impacts discovered include the Internet supplementing rather than supplanting prior human communication (Wellman, Boase, & Chen, 2002; Wellman et al., 2003), particularly through email (Horrigan & Rainee, 2002; Howard et al., 2001).
The influential study by Kraut, et al. (1996) that initially showed the Internet’s potential for isolation and depression, in that some users spent less time with offline friends and family in order to engage in presumably less substantive relationships online, was not verified in a follow up study by the same research team (the initial effects had largely dissipated in the study subjects) (Kraut et al, 2002, Williams, 2006). Indeed, as mass communication became more sophisticated, the level of communication between various global societies (and some local ones as well) rose. While heavy usage of the Internet could still be linked in some ways to negative outcomes, these outcomes were also tied to individuals who did not have strong social networks offline initially. The Internet itself did not lead to a decrease in psychological well being. Internet social interactions have much of the same impact and consequence for people as if they had taken place face to face (Bargh, 2002). Wellman, Haase, Witte, and Hampton (2001) developed more neutral results from an analysis of a large group of Internet users. The study suggested more of an integrated view of the Internet into daily life, as proposed in earlier literature; higher usage of certain types of material indicated higher offline connection with certain causes reflected in those materials. Internet communication was much more of a supplement to offline communication, neither increasing nor decreasing levels of communication between users and relatives/friends. Other studies echo this finding (Birnie & Horvath, 2002; Hlebec, Manfreda, & Vehovar, 2006; Wastlund, Norlander, & Archer, 2001). These advances in communication lead to the growth of culture. Current society operates with the Internet delivering news, entertainment, commerce, and communication easily and quickly; information is now available more rapidly than any
other time in history. The flavor of this information has changed from local to global, enlarging the cultural reach of the average individual.

The progression of civilization stems largely from increasingly evolved methods of contact that allowed societies to trade knowledge and advance on a global scale. Paralleling society’s development at large, individuals needed to engage in more complex methods of interpersonal communication to compete in an ever changing market. On a more local scale, the ability to communicate along networks emerged as more essential in maintaining personal and professional relationships. People turned to social networking to better advance their own needs and the needs of the organizations to which they belonged. Social networking can be defined as an analysis of relationships between individuals or organizations, how those relationships build groups, and how those groups continue to build relationships based on emerging relationships between members.

Garton, Hawthornwaite and Wellman (1997) defined a social network as “a set of people (or organizations or other social entities) connected by a set of social relationships, such as friendship, co-working or information exchange” (Introduction section, para. 1). Social networks allowed for communities and societies to engage in more intricate methods of developing interactions, which in turn altered the expectations for communications between individuals and groups. Regions that develop these rich social networks within local industrial systems are better able to adapt to changing markets and technologies than other regions. Scholars have pointed to the social ties that link companies together across a geographic region as the foundation of innovative, creative, and emergent industries and social networking as the process in which these creative milieus form (Neff, 2005). Socializing can exist in multiple dimensions, along various
paths, and with varying levels of intimacy based on the medium. Communication can be much more tailored to the needs of the individual or organization with innovations in technology that are adaptable (e.g. sophisticated inter office phone networks that can incorporate video conferencing). The rise of the computer, however, is swiftly shifting the pace at which communication technology progresses. The effect of the Internet on communication and society far outstrips previous influences of technology. Its rate of diffusion since the creation of the World Wide Web surpasses that of other communication technologies previously researched. It must be admitted that the Internet, as a mode of personal communication, lends itself to both beneficent and destructive uses and consequences.

There is little consensus about whether the ability of users to conduct personal and professional life through Internet technologies is ultimately good or bad for society at large, local communities, or individual well-being (Howard et al., 2001). Considering only one form of analysis of Internet communication shortchanges the complexity underlying this multifaceted medium. Viewing only the technological side ignores the psychological results of the reception and interpretation of the materials. Evaluating only the psychological effects of the Internet conveys that it is just like any other medium, and that dissimilarities in media make no difference in outcomes (Bargh, 2002). Because of the intricate intersection of media and social psychology and communication that is the Internet, all of these separate issues must be considered apart and together when theorizing about its overall effects. As online social networking as an entity was not used broadly by the public until the late eighties through the early nineties, most research here is nascent and focused on determining firm theories.
Humans are generally suited for focusing on single tasks, and the intrusion of the Internet into daily life raises the question of the ability of individuals to effectively accomplish multiple tasks at once. If a person can do homework, watch videos, post on Facebook, and order dinner, how well are any of these individual tasks actually being done? Humanity has evolved with singular focus, and the amount of choices for input available at any given time far outstrip our ability to deal with them. A study done by Carrier, et al (2009) reported that while differing generations viewed multitasking differently, the ability to effectively do so remained the same. The “Net” generation did more online multitasking than “Generation X,” who did more online multitasking than the “Baby Boomers.” Between the generations, the combination rating of tasks completed at the same time was comparable, however. All individuals were likely to rate it difficult to read for pleasure and do anything else, and all generations were likely to state it would be easier to eat or listen to music while engaged in other online tasks. The “Net” generation did engage in the most online activities and multitasked more than other generations. The evaluated effectiveness of online multitasking remains to be seen. At least in the case of using instant messaging while reading, Fox, Rosen, and Crawford (2009) found that college students demonstrated less efficiency in a reading task when simultaneously reading and sending instant messages. Reading comprehension skills did not show the same deficit in the initial measure, but did lower the longer the student was using instant messenger. As Internet use becomes more prevalent, the idea of multitasking affecting (or not, as the skill set becomes more widespread) the quality of the individual parts must also be taken into account.
Communication on the Internet

Online social networking takes the concept of social networking and adds the ability to utilize rapidly advancing technology to enlarge social networks. The concept of online social networking is an adaptation of a combination of Internet technology and distance communication, driven by evolving needs of a populace hungering for advancement in contact and connection. Both individuals and corporations utilize the idea of enlarging available networking resources, as individuals may be the largest source of capital for commercial networking. Regional networks may substitute for types of workforce support that used to be found within organizations, such as internal labor markets, job training, and job security. The reduction of professional and personal networks may lead to an increase in reliance in online networking for social reinforcement and job security (Neff, 2005). The disparity between the connected and the non-connected does indicate that this novel update of networking will not preclude the traditional exclusionary occurrences of previous networking methods.

The Internet was created as a means to disperse information across closed computer networks used mainly by the government and well funded researchers. Computer mediated communication originated on systems that were intended to link together for security and redundancy (Walther, 1996). As the technology progressed, the networks opened up to college students (on many still-closed networks) and then to the public on open networks. Technology developed from modems transferring data at glacial speeds across a few miles to large fiber optic networks capable of serving up movies in mere minutes, anywhere. Most networks now can pass information both intra- and interpersonally. The initial lack of speed and reliability of the networks meant that
information sharing was restricted only to crucial contact. As technology advanced, the amount of information that could be communicated diversified to include news, commerce, and other non-essential functions. The increase in the development of Internet technology abetted rapid advancement of expanded communication. Augmented social features of online communication began to take shape, as individuals moved away from only essential uses of this rapidly upgrading technology to include more mundane functions. The decreased price of advanced technology allowed for more high speed networks in private homes, not just in offices or on campuses. Currently, technology allows for constant connection to the Internet to maintain geographically distant relationships for both business and pleasure. The Internet extends the notion of spaces with diverse, multiple uses by increasing anonymity and reducing inhibition. Online anonymity and ambiguity creates a unique opportunity for individuals to create their own identity and to be accepted for their conduct and communications rather than by social markers such as gender, class, and race (Bryce, 2001). It has become more feasible to communicate the world over with individuals for reasons as varied as exchanging recipes, trading gardening tips, or competing in fantasy football leagues, not just for educational purposes or business exchanges.

Research has pointed out that the Internet is being used as a way to “keep contact among friends who are socially and geographically dispersed” (Wellman, Quan Haase, Witte, & Hampton, 2001, p.450). Individuals have gained the ability to keep in touch with others who may have decamped large distances. Information that may have been lost or destroyed previously is now archived and searchable through many different sources, all available to the average Internet user. While it was possible previously to
completely lose touch with someone from the past and have no way to find that person or get back in contact with him or her, the Internet has removed barriers and allowed for connections that would have been seen as impossible before. Websites exist to reconnect old classmates, military buddies, former romantic interests, previous work colleagues; any prior relationship can be quickly and easily reestablished. Technology has greatly enlarged the circle of reach for the average individual. A social circle is not restricted to those people one can see on a daily basis, or has met in person at some point. An individual can communicate with individuals in varied time zones that he or she has never even met face to face. Relationships develop for reasons that did not exist in prior societal development and are not restricted to relation or convenience. Something as simple as sharing a curiosity about fishing or history can provide a link to another individual halfway around the world. Researching connections is easier to accomplish, be it with those who share interests or with whom one used to be acquainted. Advanced technical skills are not necessary to search records and find information about someone. At this point, the Internet is more likely to extend social contact than detract from it, causing more developed contacts between friends and family and establishing new relationships where associations were more casual prior (Howard, 2001).

**Discussion of Pathology Related to Internet Use**

The intrinsic nature of Internet communication must be expected to cause some difficulty based on the sheer scope of potential contacts. When the medium never has to be turned off, when exposure to both positive and negative influence of others is indefinitely far reaching, maladaptive behavior should be expected. Offline human interactions have expected emotional consequence because of the drive of individuals to
engage in relationships and the intense reliance on those relationships for emotional health and well being. Combining the strength of relationship outcome emotionally with the difficulty of authenticity of relationships online can cause side effects that are generally not anticipated by those involved.

Experts have studied the phenomenon of Internet misuse since almost the creation of the modern concept of the Internet. The research has broadened along with the rapid development of the involved technologies, with scientists in many fields struggling to keep up. Initial studies, such as Shotton (1991) and Chou (1999) discussed computer mediated communication among a small subset of the population, who were more likely to be computer specialists who were employed to work on the Internet. As the Internet spread from a select audience to the general public, signs of misuse began to become evident in the Internet-using population. Researchers have not yet come to a consensus on how to identify maladaptive behavior on the Internet. Heavy online communication indicates some maladaptive behaviors (Mazalin & Moore, 2004). Researchers also found results presenting evidence of alternative personality development for online dating and social relationships (Anderson, 2005; Bargh & McKenna, 2001; Caplan, 2003; Douglas & McCarty, 2001; Markey, Wells, & Markey, 2002). While it is fairly obvious that the negative effects of excessive or negative usage of the Internet are measureable, the sources of the problems related to this behavior differ from study to study. Some studies categorize Internet addiction as overuse, some connect the side effects to the type of technology preferred by the user, and others recommend basing any identification on how offline relationships suffer in comparison.
The Internet creates a disinhibition effect, based on lack of face to face contact between users. Socially, humans generally feel a responsibility for the outcome of their communication. Individuals have a socially engineered accountability for the statements they make. Communication lacking this conscientiousness has the potential for great harm or negative effect. Online disinhibition stems from several factors: anonymity, invisibility, asynchronicity, introjection, imagination, and lack of authority.

Asynchronicity involves communication falling out of real time; if a person writes a message for another person to read at a later time, the original instigator can forget the impact of the initial communication by the time the recipient reads the message and incurs hurt feelings or misunderstandings. The concept of introjection refers to a common practice in online communication where the individuals discoursing absorb characteristics of either their idols or each other, internalizing external influences into their Internet personas. Authority on the Internet is a nebulous construct, due to the lack of centralization in most communication. While moderators of message boards and system administrators of applications can enforce rules and ban users, those bans are only as good as the security that limits multiple user logons and hacking into other accounts. All of these factors are evident in face to face communication, but computer mediated communication lacks the physical verbal and non-verbal cues humans receive as a moderation of undesirable behavior. The inability to see or be seen when talking, the time delay with some technologies, the interface as game playing instead of non-leisure interactions (and the associated shift in thought pattern from professional to personal), and the lack of any overseeing authority in most online dialogues contributes strongly to a insidious perception of lack of impact related to online contact. (For a more thorough
discussion of these effects, please see materials by Suler (2004). Previous research on the harmful effects of communication shows that some of the very features that make the Internet so successful can exacerbate the negative consequences. When distance and anonymity are introduced, the associated responsibility is reduced because of lack of exposure to the effect of negative communication. A casual statement, made to wound, is uttered without ever seeing the emotionally devastating effects suffered on the other end. Conversely, the immediacy of online communication provides artificial intimacy, with people becoming much more attached to other users without exploring details of relationships. The depth of this assumed intimacy can amplify the negative effects that occur in relationships. Bonds are built on shared interests or explosive feelings without any deeper insight on the humanity on the other end of the discussion. Layers of association are missing or simply assumed to exist. The assumption of involved connections without accurate intimacy also causes a host of problems, from disruption of offline relationships to psychological problems that mimic those found in established relationships.

The bulk of research and evaluation tends to focus on key areas of study related to maladaptive Internet use. Boies et al. (2004) discussed at length relationships between utilization of the Internet for sexually addictive behaviors and a comparison to other uses of the Internet, with key findings reported as higher levels of lower offline functioning in subjects who engaged in such behaviors. Research on sexual addiction utilizing the Internet as the medium has attracted much attention in the media and with scientists; data suggests that this form of Internet abuse causes more damage than other forms (or is more easily identifiable). Gambling is another behavioral addiction that generates a great deal
of exploration, but the discussion also includes the debate on how central the Internet is to gambling. Less examination has occurred of behaviors that are unique to the Internet, such as instant messaging, online social networking, e-mail, and file sharing. Psychology as a field is working to integrate new technologies in the issues with which clients present. To maintain therapeutic interventions that are rooted in evidence based practice, informed research must be generated that can be quantified and applied by therapists working with varying populations.

Various measures of Internet addiction have been proposed in the literature. The study authors created most of the measures utilized for research. These measures focus on concepts from excessive use of the Internet or World Wide Web to self-identification of negative consequences of certain types of use. Young (1998), Armstrong et al. (2000), and Nichols and Nicky (2004) focused on excessive use of the Internet as key component of their instruments. Beard (2005) constructed a sample interview for clinicians with items to evaluate the degree of misuse or maladaptive behavior, for use by therapists who speculate on problematic Internet use in the population with which they work. Caplan (2003), Davis et al. (2002), and Rotunda (2003) examined subjects’ ability to identify a level of Internet usage that elicited negative side effects (based on part on DSM IV criteria for addictive behaviors). Some researchers even explicitly brought the strength of statistics to bear on the issue, engaging in factor analysis to determine the most reliable and salient factors related to problematic Internet habits (c.f. Charlton, 2002, and Pratarelli & Brown, 2002 for detailed studies). A large degree of overlap exists between the various studies (only a small sample of which are cited here), but many common themes exist: analysis of criteria as compared to previous research on behavioral
addictions, question of how to identify “true” addictive behavior, what factors best load into data collection instruments to determine measure of maladaptive behaviors, what other measures should be administered simultaneously to elicit best capture of symptomology, and what diagnoses may be predicted to occur co-morbidly with Internet misuse. Research continues to focus on how to best address the above issues, while considering previous hypotheses and findings.

**College Students Utilizing the Internet**

The overarching purpose of this study is to investigate how much college students utilize online social networking. Specifically, it will explore what Adamic and Adar (2005) explained to be “online social networking services gather information on users’ social contacts, construct a large interconnected social network, and reveal to users how they are connected to others in the network” (Adamic & Adar, 2005, p. 188). A body of research already exists on the preliminary effects of online social networking on the greater population. While early results showed some negatives related to socialization and high rates of Internet usage (Kraut, 1998), later studies refuted that information with data showing more connectedness among friends and kin utilizing technology. Bargh and McKenna (2004) found that most studies supported an increase in most forms of social connectedness from Internet usage. College students are certainly among these individuals staying connected through social networking. They are often ahead of the adult population in trying new techniques in communication online because of their status of early adopters of technology. Students themselves must negotiate different social norms online than they would offline. The “always on” nature of online communication dictates that an individual who wishes to not get lost in constant communication would
put some sort of rules in place to govern it. As online relationships grow and change, social accessibility in its complexity does the same. The pervasiveness of an individual’s online presence necessitates the equivalent of letting the answering machine pick up—screening messages to determine if this is a necessary or desired conversation at a convenient time (Quan-Haase & Collins, 2008). This unique issue has proliferated from just college campuses to the work world, with Blackberries and iPhones causing just as much constant connection. Not only are the ways in which humans communicate and do business different from how they were a decade ago, but students also spend their time and energy on campus differently than they did a decade ago. Students spend more time utilizing online resources for research, communicating with professors, and interaction with campus staff and organizations. Patterns of engagement are changing due to the use of personal computing, yet many institutional services are barely keeping up with high student expectations for technology (Arend, 2004).

It has been noted in previous studies that the development of a firm sense of identity and of meaningful, intimate relationships with romantic partners are the two major psychological issues that all college students have to resolve (in Kandell, 1998). Students who have troubles developing identity and intimacy are more potentially likely to indulge themselves in the virtual world than their counterparts who have resolved these two psychological issues in the real world. College students also have a higher level of constant Internet access and flexible schedules, which can contribute to possible Internet misuse (Huang, 2006). Social networks change over time as relationships are formed or abandoned, and services like email and instant messaging help college students remain close to their high school friends after they leave home for college. Online social
networking, for the college student, could greatly increase the weak ties one could form and maintain because the technology is well-suited to maintaining such ties cheaply and easily (Ellison, 2007).

A focus of existing research on college students’ use of the Internet is the negative effects of overutilization. Unfortunately, no standard definition has been empirically determined for how much use defines Internet addiction, so studies tend to have different, internal measures for how students are misusing the Internet on campus. The underlying determinant from various studies tends to be the intersection of psychopathology (lack of offline relationships, increased introversion or shyness, or decrease in grades) and number of hours spent online. There is a distinct, but artificial, divide between those called “addicted” and those who use the Internet in a more effective way. Unsurprisingly, studies by Chou (2001), Bonebrake (2002), Engelberg and Sjöberg (2004), and others showed that higher levels of time spent on the Internet, to the exclusion of offline activities, correlated to higher levels of loneliness, shyness, deviance in values from the majority population, lower levels of face to face interaction, and lowered self esteem. These students have turned to the Internet for reasons such as pre-existing shyness, ease of use for social networking, forming networks that deteriorated with graduation from high school, and use of technology that does not exist outside the Internet. Geographically, they expect to be linked with others from right next door as well as across the globe, but their primary use of online social networking is not necessarily restricted to those who are not local. The junction of how these students have always utilized the Internet and the continued development of technology leads to relational expectations based on both adolescent developmental norms and distinct side effects of
technology. It is difficult to hazard a guess on which is primary—are shyer, more lonely students more likely to utilize the Internet for social networking as opposed to offline sources, or does the inherent anonymousness and disinhibition of online social networking fostering a community of students who turn to the Internet first as a resource? Yuen and Lavin (2004), Niemz, Griffiths, and Banyard (2005) and Fortson, Scotti, Chen, Malone, and Del Ben (2007) discuss at length their findings of students having more negative symptoms from limited but significant amounts of Internet use during a weekly period. None of the studies they cite conjecture the origin of the issue with students and psychopathology.

One important focus of studies on students is the disparity between the sexes and use of the Internet. Many studies have borne out the hypothesis that males would have more maladaptive use of the Internet, and that the sexes utilize the Internet for differing reasons. Samples of the research include Anderson’s (1998) findings that males were seven times more likely to be dependent than females, Scherer’s (1997) findings that males were almost three times more likely, and Morahan-Martin and Schumacher’s (2000) results that males were four times more likely to be dependent than females. The reasons behind this discrepancy are not clear, although they could be based on the selection of activities that males are engaging in on the Internet. Males are more likely to use e-mail, chat rooms, and computer games, as found by Li and Kirkup (2007). Niemz pointed out that males’ usage patterns are more likely to resemble behavioral addiction, in which the medium simply transmits the negative behavior to the individual (thus those behaviors that are more likely to be addictive, such as gambling, sexual activity, and gaming, [which are engaged in more by males] are going to contribute to a higher level of
addiction in males as compared to females). As discussed by Baron (2004), women are more likely to socialize online, with more and longer communication for networking purposes.

College students have integrated various forms of online communication into relationships and lifestyles, and have done so for most of their lives. The literature focusing exclusively on students’ maladaptive behaviors related to Internet use is underdeveloped compared to studies on the larger population of Internet users. One of the aims of this study is to consider if their developmental stage and personal notions of communication affect college students’ utilization of the Internet.
Chapter 3
Methodology

Data Collection

Participants will consist of undergraduates taking an elective course in the College of Education at a large research-intensive institution (approximately 35,000 students). Enrollment is distributed similarly among the undergraduate divisions, with seniors having the highest enrollment but the other classes being close behind. More female students are enrolled than male students, with females comprising 54% of the student population. Racial demographics are skewed towards Caucasians, who make up 79% of the total student population; the next highest reporting race is students of Asian descent. The mean age for this group is 21. Subject selection is based on a convenience sample of undergraduate students in the academic department taking an introductory career course. The respondents are assumed to have regular exposure to the Internet and be able to utilize high speed connections for academic and leisure purposes based on the location and distribution of students at this university. Students are also assumed to have some knowledge of social networking tools and how to use the Internet for normal activities. The students will be given an informed consent document explaining the possible risks involved, which should be minimal and based on the administration of psychological instruments. Students agreeing to participate in the study will be asked to sign the document and given a copy of the information for their future reference. No identifying data outside of age, racial group, and sex will be collected to protect the anonymity of the
subjects. Only the researcher will have access to the information connecting the subjects' demographic information with their gathered responses. Each student who consents to participate in the data gathered will be administered four measures: the Beck Depression Inventory, Second Edition, the Multidimensional Anxiety Questionnaire, the Internet Addiction Test, and the Student Internet Use Survey (from a previous pilot study by the researcher).

**Instrumentation**

The *Beck Depression Inventory, Second Edition* (BDI-II) will be used to collect data on depression. The BDI-II is a 21-item self report instrument for measuring the severity of depression in adults and adolescents aged 13 years and older. This version of the inventory was developed for the assessment of symptoms corresponding to the criteria for diagnosing depressive disorders listed in the DSM-IV (1994). The BDI-II is one of the most widely accepted instruments for assessing the severity of depression in diagnosed patients and for detecting possible depression in normal populations. The average coefficient alpha of the BDI for psychiatric patients falls in the high .80s. Substantial data exists on the concurrent and construct validity with respect to a variety of psychological measures.

The level of possible Internet addiction will be measured with the *Internet Addiction Test* (IAT). The IAT is a 20-item questionnaire which measures mild, moderate, and severe levels of Internet Addiction. It is designed to assess which areas of an individual’s life might be affected by their excessive Internet use. The measure has high face validity and good to moderate internal consistency (alpha coefficient of 0.54–0.82).
Anxiety and social phobia will be assessed using one measure which evaluates both general and specific anxiety: the *Multidimensional Anxiety Questionnaire* (MAQ). The MAQ is a 40 item self-report pencil-and-paper inventory designed to evaluate the severity of anxiety symptoms in adults. The MAQ yields five T-scores: Total Scale, Physiological-Panic (12 items), Social Phobia (9 items), Worry-Fears (10 items), and Negative Affectivity (9 items). In addition, the MAQ Total Scale provides a cutoff score as an indicator of a clinically significant level of anxiety that warrants further evaluation. The items on the MAQ were developed to address the symptoms of anxiety included in Panic Disorder, Generalized Anxiety Disorder, and Social Phobia, and symptoms that are shared between anxiety disorders and depressive disorders. The internal consistency (coefficient alpha) estimate for the combined total adult community/psychiatric outpatient sample was quite high (.96). Test-retest reliability for a mixed community/psychiatric outpatient sample at a 1-week retesting interval was .95 for the total scale (with subscales ranging from .90 to .93). Evidence has been corroborated on content validity, criterion-related validity in the form of concurrent validity, and construct validity.

Information about students’ Internet habits will be gathered with a measure originally generated in a pilot study conducted by the researcher, modified to ask only specific questions related to online social networking utilization, online usage habits, quantification of friends offline, and demographics. The Student Use Internet Survey was developed based on a thorough literature review of social networking and current Internet usage patterns. The instrument was designed based on a survey developed for an earlier study (Lloyd, Dean, & Cooper, 2006).
Data Analysis

The data returned by the respondents will be analyzed using descriptive statistics, as well as inferential statistics, to determine information about sex and any possible significant differences between racial groups. Analysis of variance will be conducted on the descriptive statistics to evaluate variation between the overall values and the values for each subject on the measures. The data will additionally be analyzed for measure of distribution to ascertain which correlation coefficient would be appropriate: Pearson’s correlation coefficient will be utilized if the data is normally distributed, and Spearman's rank correlation coefficient will be used in the case of a non-parametric data distribution. Partial correlation will be utilized to examine the relationship between the total values scored on the measures and reported time spent online, and tested for the degree each measure contributes to the overall significance.

Research Questions

Individuals who utilize the Internet to an excessive degree may find that they are suffering from specific psychopathology or multiple intersecting negative behaviors. The choices of specific psychopathology are based partially on the literature, but also on the most highly identified problems in college students who seek counseling. The overarching concern of the study is identifying both the amount of measureable psychopathology the subjects are reporting, and how this psychopathology compares to the amount of time students spend engaged in online social networking. Depression, anxiety, and social anxiety are all disorders that could be seen as co-morbid to the college experience, but more research can assist in determining if excessive use of online social
networking contributes significantly to the establishment of seemingly unrelated behaviors.

Research Question 1: Is there a statistically significant difference by sex between amounts of online social networking?

Previous research identifies differing levels of Internet usage between males and females, with each having different activities of choice. Information gathered about the amount of time spent utilizing online social networking through the Student Internet Use Survey will be compared across reported sexes of the subjects through a t statistic to see if a significant difference exists in the amount of time spent online.

Research Question 2: Is there a statistically significant difference between how the sexes rate their own amount of online usage compared to others?

An analysis will be conducted on data gathered on the Student Internet Use Survey on how the student rates his or her own online usage as compared to others—lower, average, or higher. Students tend to underreport their own usage habits and behaviors in many common activities, based on the idea that their behaviors are “normal” as compared to others. Data collected about personal rate of online usage sheds light on discrepancies between reported and actual usage. The total usage personal ratings might significantly differ between sexes as women and men may report their personal habits differently. These results will be compared across reported sexes of the subjects through a t statistic to see if a significant difference exists between personal ratings of online usage.

Research Question 3: Is there a statistically significant difference by racial group between amounts of online social networking?
Due to factors such as socioeconomics, peer usage, and observed behavior, racial
groups have historically utilized the Internet at different levels. Information gathered
about the amount of time spent utilizing online social networking through the Student
Internet Use Survey will be compared across reported racial groups of the subjects
through a t statistic to see if a significant difference exists in the amount of time spent
online.

Research Question 4: Is there a statistically significant difference by classification
between amounts of online social networking?

Between the start of college and the finish, students will undoubtedly mature from
adolescents to young adults. With that maturity should come re-ordering of priorities and
more balanced behaviors. Information gathered about the amount of time spent utilizing
online social networking through the Student Internet Use Survey will be compared
across reported classifications of the subjects through a t statistic to see if a significant
difference exists in the amount of time spent online.

Research Question 5: As online social networking use increases, will offline
friendship development decrease?

An analysis will be conducted from the data gathered on the Student Internet Use
Survey on time spent engaged in online social networking and reported number of offline
friendships that currently exist in the students’ lives. The appropriate correlation
coefficient (Pearson’s $r$ or Spearman’s $\rho$) will be examined for degree of a significant
correlation between amount of time spent online and number of offline friendships.
Research Question 7: Will higher levels of online social networking usage correlate with results of the measures utilized for Internet addiction, social phobia, anxiety, social anxiety, or depression?

The results of the measures will be correlated with the amount of time spent on the Internet to see if significant results on the measures occur with differing levels of reported time spent. A partial correlation will be completed to evaluate the contribution of each measure to the overall identified pathology of the respondent related to the amount of time spent engaged in online social networking.

Research Question 6: Will higher levels of social phobia correlate with lower levels of friends existing offline?

Research Question 8: Will levels of online social networking usage correlate with results on measures of Internet addiction?

Research Question 9: Will levels of online social networking usage correlate with levels of anxiety?

Research Question 10: Will levels of online social networking usage correlate with scores on a measure of depression?

Research Question 11: Will levels of online social networking usage correlate with the user having higher levels of social anxiety or social phobia?

These questions all relate to relationships between degree of potential psychopathology as found by various psychometrics and either amount of online usage or amount of offline friendships reported. The scores produced on each measure administered (the MAQ, IAT, and BDI-II) will be compared to either the time spent online or the number of claimed friends offline. Data will be analyzed for correlations in
either direction between levels on the measures which predict psychopathology and self report of students. The appropriate correlation coefficient (Pearson’s $r$ or Spearman’s $\rho$) will be examined for a significant degree of correlation between amount of time reported engaging in online social networking and scores on the MAQ, scores on the IAT and amount of time spent engaged in online social networking, amount of time engaged in online social networking and scores on the BDI-II, and scores reported on the MAQ Social Phobia subscale and amount of time spent engaged in online social networking. The appropriate correlation coefficient (Pearson’s $r$ or Spearman’s $\rho$) will be examined for negative correlations between the number of offline friendships and scores on the MAQ Social Phobia subscale.

Research Question 12: Will scores on addiction measures correlate in the same direction in students with anxiety or depression?

Research Question 13: Do scores on addiction measures differ in amount of correlation between the sexes?

Scores on the IAT will be compared to the scores on the MAQ and the BDI-II. If the respondent scores in the range for potential psychopathology on either the MAQ or BDI-II, data will be analyzed utilizing a regression analysis for a positive or negative correlation when comparing the results of the IAT to the MAQ and BDI-II. Analysis will focus on if the direction is consistent or divergent between the measures depending on which measure the student obtains a significant score. A correlation will then be calculated between the sexes to examine if the significance in correlation exists by the reported sex of the participants.
Research question 14: Is there a statistically significant difference between the sexes on the results of the measures utilized for Internet addiction, anxiety, social anxiety, or depression?

Research has shown that there are different rates in diagnosis for various psychopathologies. In the general population, men are more likely to be diagnosed with Internet addiction, while women more often seek treatment for social anxiety, general anxiety, and depression. The mean of each measure will be compared to examine any difference between the sexes on scores for the measures. An analysis of variance will be utilized to explore relationships between means and responses by sex.

Research question 15: Is there a statistically significant difference between hours spent online engaged in online social networking and hours spent online total as reported by respondents (when compared by sex)?

A lack of research exists examining the percentage of time spent online engaged in online networking when compared to the entirety of time spent online when considered by sex. While women spend more time engaging in online social networking than men, the question remains how much time that constitutes from the whole of time spent online. The frequency of responses to the question of time spent online will be compared to the frequency of responses to the question of time spent engaged in online social networking to see if a significant difference exists for each sex.
Chapter 4

Results

This research was conducted to evaluate the possible relationships between online social networking, excessive use, and psychopathology. Specifically, students were surveyed on amount of online social networking and development of offline and online contacts. This information was compared to measures of depression, anxiety, social phobia, social anxiety, and Internet addiction to determine if any statistically significant relationships existed between symptoms of psychopathology and Internet usage. Outcomes are reported on descriptive and inferential statistics, including analysis of variance and evaluation of correlations.

Demographics

All of the students who were given the survey in their classes filled them out after explanation of the informed consent document. One classroom ran out of time to complete the survey; five of those students chose not to stay after class to complete the survey. In total, 330 surveys were collected from the students, giving a 98.5% return rate. The study results contained the following demographics: the majority of respondents were female [66% (n=217) compared to 34% male (n=112)], 78.7% Caucasian (n=259), 8.8% African American (n=29), 6.7% Asian (n=22), and 5.8% other or mixed racial backgrounds (n=19). The other racial backgrounds included Native American (n=1), Hispanic (n=3), and respondents who checked more than one racial category (n=15). The study participants were representative of all academic classifications, with 32.3% being
freshmen \((n=106)\), 15.2\% reporting as sophomores \((n=50)\), 14.3\% responding as juniors \((n=47)\), and 38.3\% identifying as seniors \((n=126)\). One student respondent was an MBA; those results were not included in the data analysis due to lack of undergraduate status.

Table 1

*Demographic Information \((N=329)\)*

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>217</td>
<td>66.0</td>
</tr>
<tr>
<td>Male</td>
<td>112</td>
<td>34.0</td>
</tr>
<tr>
<td>Racial Group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>259</td>
<td>78.7</td>
</tr>
<tr>
<td>African American</td>
<td>29</td>
<td>8.8</td>
</tr>
<tr>
<td>Asian American</td>
<td>22</td>
<td>6.7</td>
</tr>
<tr>
<td>Other or mixed-race</td>
<td>19</td>
<td>5.8</td>
</tr>
<tr>
<td>Classification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshman</td>
<td>106</td>
<td>32.2</td>
</tr>
<tr>
<td>Sophomore</td>
<td>50</td>
<td>15.2</td>
</tr>
<tr>
<td>Junior</td>
<td>47</td>
<td>14.3</td>
</tr>
<tr>
<td>Senior</td>
<td>126</td>
<td>38.3</td>
</tr>
</tbody>
</table>

**Statistical Power Analysis**

Statistical power was determined through use of the computer application G*Power 3 (Faul, Erdfelder, Lang & Buckner, 2007). To achieve power of .80 for the t-tests of the results, a medium effect size \((0.3)\) at an alpha value of .05, a sample of at least 82 respondents was necessary. With \(N=330\), an alpha value of .05, and a desired medium effect size \((\omega=0.3)\), the actual power of the study was calculated to be 0.99. For the \(\chi^2\) tests, with a desired medium effect size \((\omega=0.3)\), four degrees of freedom, power of .80, and an alpha value of .05, 133 respondents were necessary. With \(N=330\), an alpha value of .05, four degrees of freedom, and a desired medium effect size \((\omega=0.3)\), the actual
power of the study was calculated to be 0.99. Based on this information, this study is adequarely powered to determine the statistical validity of the results.

**Research Questions and Results**

Research Question 1: Is there a statistically significant difference by sex between amounts of online social networking?

Respondents’ answers to the amount of time spent engaging in online social networking were compared to see if a statistically significant difference existed between the sexes in time spent at this activity. Due to the fact that answers to the amount of time spent online were ranked in an ordinal fashion versus interval, a non-parametric analysis was used to compare the distribution of the samples. The results of the Mann-Whitney U test were found to be statistically significant ($p=.019$), with females (mean rank= 171.53) having a statistically significantly higher ranking mean than men (mean rank=147.73).

To further examine the differences between the sexes utilizing online social networking, specific activities were included in the survey to ascertain where potential statistical significance might arise. Questions were asked ranking utilization of weblogs, personal ads, and specific online social networking sites such as MySpace, Facebook, Bebo, and others. Another non-parametric analysis was used to compare the distribution of the samples for each question. The results of the Mann-Whitney U test were found to be statistically significant regarding differences in use of personal ads and online social networking sites (see Table 2). No statistically significant difference was found between the sexes in the use of web logs (see Table 2).
Table 2

*Analysis of Sex Differences between Specific Online Social Networking Activities*

<table>
<thead>
<tr>
<th>Source</th>
<th>Sex</th>
<th>Mean Ranking</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Networking – Blogs</td>
<td>Female</td>
<td>159.90</td>
<td>.099</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>174.88</td>
<td></td>
</tr>
<tr>
<td>Social Networking – Personal Ads</td>
<td>Female</td>
<td>161.34</td>
<td>.007</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>172.09</td>
<td></td>
</tr>
<tr>
<td>Social Networking – Online Social Networking Sites</td>
<td>Female</td>
<td>178.06</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>139.69</td>
<td></td>
</tr>
</tbody>
</table>

Research Question 2: Is there a statistically significant difference between how the sexes rate their own amount of online usage compared to others?

Students were asked to rank their own perception of their online usage as compared to others. Due to the fact that answers ranking personal perception of time spent online were ranked in an ordinal fashion versus interval, a non-parametric analysis was used to compare the distribution of the samples between the sexes. Among female respondents, 8.8% rated themselves as below average in usage (n=19), 76.5% rated themselves as average (n=166), and 14.7% rated themselves as above average in usage. Examining male respondents, 11.6% rated themselves as below average in usage (n=13), 58% rated themselves as average (n=65), and 30.4% rated themselves as above average in usage (n=34). The results of the Mann-Whitney U test were found to be statistically significant (p=.029), with males (mean rank= 177.82) having a higher ranking mean than females (mean rank=158.38).
Research Question 3: Is there a statistically significant difference by racial group between amounts of online social networking?

Respondents’ answers to the amount of time spent engaging in online social networking were compared to see if a statistically significant difference existed between racial groups in time spent at this activity. Due to the fact that answers to the amount of time spent online were ranked in an ordinal fashion versus interval, a non-parametric analysis was used to compare the distribution of the samples. The result of the Kruskal-Wallis test was not found to be statistically significant ($p=.452$).

To further examine the differences between racial groups utilizing online social networking, specific activities were included in the survey to ascertain where potential significance might arise. Questions were asked ranking utilization of weblogs, personal ads, and specific online social networking sites such as MySpace, Facebook, Bebo, and others. Another non-parametric analysis was used to compare the distribution of the samples for each question. The results of the Kruskal-Wallis test were found to be statistically significant regarding differences in use of online social networking sites (see Table 3). No statistically significant difference was found between racial groups in the use of web logs and personal ads (see Table 3).

Table 3

Analysis of Racial Group Differences between Specific Online Social Networking

<table>
<thead>
<tr>
<th>Activities</th>
<th>Source</th>
<th>Mean Ranking</th>
<th>$\chi^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Networking – Blogs</td>
<td>Racial Group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Asian American</td>
<td>189.00</td>
<td>4.037</td>
<td>.401</td>
</tr>
</tbody>
</table>
Research Question 4: Is there a statistically significant difference by classification between amounts of online social networking?

Respondents’ answers to the amount of time spent engaging in online social networking were compared to see if a statistically significant difference existed between classifications in time spent at this activity. Due to the fact that answers to the amount of time spent online were ranked in an ordinal fashion versus interval, a non-parametric analysis was used to compare the distribution of the samples. The result of the Kruskal-Wallis test was found to be statistically significant (see Table 4).

To further examine the differences between classifications utilizing online social networking, specific activities were included in the survey to ascertain where potential significance might arise. Questions were asked ranking utilization of weblogs, personal ads, and specific online social networking sites such as MySpace, Facebook, Bebo, and

<table>
<thead>
<tr>
<th>Classification</th>
<th>Mean Time</th>
<th>Z-score</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>170.34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>113.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>162.39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>174.25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Social Networking – Personal Ads

<table>
<thead>
<tr>
<th>Classification</th>
<th>Mean Time</th>
<th>Z-score</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian American</td>
<td>165.23</td>
<td>2.698</td>
<td>.610</td>
</tr>
<tr>
<td>African American</td>
<td>157.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>157.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>166.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>157.50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Social Networking – Online Social Networking Sites

<table>
<thead>
<tr>
<th>Classification</th>
<th>Mean Time</th>
<th>Z-score</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian American</td>
<td>198.09</td>
<td>10.716</td>
<td>.030</td>
</tr>
<tr>
<td>African American</td>
<td>204.16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>201.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>158.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>144.84</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
others. Another non-parametric analysis was used to compare the distribution of the samples for each question. The results of the Kruskal-Wallis test were found to be statistically significant regarding differences in use of online social networking sites (see Table 4). No statistically significant difference was found between classifications in the use of web logs and personal ads (see Table 4).

Table 4

Analysis of Classification Differences between General and Specific Online Social Networking Activities

<table>
<thead>
<tr>
<th>Source</th>
<th>Classification</th>
<th>Mean Ranking</th>
<th>$\chi^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours Online Social Networking</td>
<td>Freshman</td>
<td>186.33</td>
<td>17.720</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Sophomore</td>
<td>178.29</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Junior</td>
<td>136.48</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Senior</td>
<td>147.24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Networking – Blogs</td>
<td>Freshman</td>
<td>153.47</td>
<td>4.683</td>
<td>.187</td>
</tr>
<tr>
<td></td>
<td>Sophomore</td>
<td>167.97</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Junior</td>
<td>158.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Senior</td>
<td>174.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Networking – Personal Ads</td>
<td>Freshman</td>
<td>163.67</td>
<td>2.698</td>
<td>.723</td>
</tr>
<tr>
<td></td>
<td>Sophomore</td>
<td>167.22</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Junior</td>
<td>168.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Senior</td>
<td>162.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Networking – Online Social Networking Sites</td>
<td>Freshman</td>
<td>189.45</td>
<td>11.753</td>
<td>.000</td>
</tr>
</tbody>
</table>
Research Question 5: As online social networking use increases, will offline friendship development decrease?

Results of the measures were examined to determine if there was a statistically significant relationship between the amounts of time spent engaging in online social networking and the amount of offline friendship development reported. Specifically, students were asked to provide a percentage of how many online friendships had initially been established offline. The means between categories assigned to amount of time spent online were examined for significant differences in variance as offline friendship development is reported. The analysis of variance showed no statistically significant relationship between the amount of offline friendship development reported and the amount of time spent engaging in online social networking ($F (4,329) = .629, p=.642$).

Research Question 7: Will higher levels of online social networking usage correlate with results of the measures utilized for Internet addiction, social phobia, anxiety, social anxiety, or depression?

The mean of each measure was compared to the amount of time spent online using social networks. An analysis of variance was utilized to explore relationships between means and categories for each type of psychopathology that was examined. For depression, no statistically significant relationship was found between levels of depression and amount of time spent engaging in online social networking. For Internet addiction, a statistically significant relationship was found between the amount of time spent engaging in online social networking and self-report of symptomology of Internet addiction (see Table 5). For general anxiety, no statistically significant relationship was found between levels of anxiety and amount of time spent engaging in online social
networking. For social phobia, a statistically significant relationship was found between amounts of time spent engaging in online social networking and self-report of symptomology of social phobia (see Table 5). For social anxiety, no statistically significant relationship was found between amounts of time spent engaging in online social networking and self-report of social anxiety levels.

Table 5

Analysis of Variance for Online Social Networking

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet Addiction</td>
<td>4</td>
<td>15.864</td>
<td>.000</td>
</tr>
<tr>
<td>Anxiety</td>
<td>4</td>
<td>1.048</td>
<td>.382</td>
</tr>
<tr>
<td>Social Phobia</td>
<td>4</td>
<td>2.907</td>
<td>.022</td>
</tr>
<tr>
<td>Social Anxiety</td>
<td>4</td>
<td>1.505</td>
<td>.200</td>
</tr>
<tr>
<td>Depression</td>
<td>4</td>
<td>1.031</td>
<td>.391</td>
</tr>
</tbody>
</table>

The next five questions are all examining related analyses on students’ responses on negative symptomology and reports of online usage habits. The data was analyzed for correlations in either direction between levels on the measures which predict psychopathology and self report of students. Table 6 summarizes the findings of the correlations.

Research Question 6: Will higher levels of social phobia correlate with lower levels of friends existing offline?

Spearman’s $\rho$, as the appropriate correlation coefficient, was examined for a statistically significant degree of correlation between the number of offline friendships and measured symptoms as reported for social phobia. In examining the relationship between values returned on the MAQ-SP scale and the reported development level of offline friendships, no statistically significant relationship was found. The analysis did
not find that a change in the number of offline friendships would predict a change in the reported symptoms for social phobia.

Research Question 8: Will levels of online social networking usage correlate with results on measures of Internet addiction?

Spearman’s ρ, as the appropriate correlation coefficient, was examined for a statistically significant degree of correlation between reported symptomology of Internet addiction and amount of time spent engaged in online social networking. In the relationship between levels of reported usage of online social networking and results on measures of Internet addiction, a statistically significant positive relationship was found between levels of online social networking and scores on the IAT [\( \rho (2484, n=329) = 2.942E3, p=.000 \)]. When levels of reported online social networking increased, there was a perceptive increase in the reported symptoms of Internet addiction.

Research Question 9: Will levels of online social networking usage correlate with levels of anxiety?

Spearman’s ρ, as the appropriate correlation coefficient, was examined for a statistically significant degree of correlation between amount of time reported engaging in online social networking and reported amounts of anxiety. When examining anxiety and online social networking, no statistically significant relationship was found between amount of time spent engaging in online social networking and scores on the MAQ. The analysis did not find that a change in the amount of reported online social networking would predict a change in the reported symptoms for anxiety.

Research Question 10: Will levels of online social networking usage correlate with scores on a measure of depression?
Spearman’s $\rho$, as the appropriate correlation coefficient, was examined for a statistically significant degree of correlation between amount of time engaged in online social networking and depression symptomology. Examining the relationship between levels of online social networking reported and scores on a measure of depression, no statistically significant relationship was found between reported online social networking and scores on the BDI-II. The analysis did not find that a change in the amount of reported online social networking predicted a change in depression symptomology.

Research Question 11: Will levels of online social networking usage correlate with the user having higher levels of social phobia?

Spearman’s $\rho$, as the appropriate correlation coefficient, was examined for a statistically significant degree of correlation between measured symptoms as reported for social phobia and amount of time spent engaged in online social networking. In the relationship between amount of time spent reported engaging in online social networking and results on a measure of social phobia, a statistically significant positive relationship was found between amount of time spent engaging in online social networking and scores on the MAQ-SP. The analysis did not find that a change in the amount of reported online social networking predicted a change in social phobia symptomology.

Table 6

*Goodness-of-fit Calculated between Measures of Psychopathology, Online Social Networking, and Offline Friendship Development*

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>$\chi^2$</th>
<th>Spearman’s $\rho$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationship between MAQ-SP and Offline Friendship Development</td>
<td>513</td>
<td>.759</td>
<td>.130</td>
</tr>
<tr>
<td>Relationship between IAT and Online Social</td>
<td>184</td>
<td>2.979E2</td>
<td>.000</td>
</tr>
</tbody>
</table>
Networking

<table>
<thead>
<tr>
<th>Relationship</th>
<th>N</th>
<th>r</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationship between MAQ-T and Online Social Networking</td>
<td>216</td>
<td>.925</td>
<td>.223</td>
</tr>
<tr>
<td>Relationship between BDI and Online Social Networking</td>
<td>96</td>
<td>.856</td>
<td>.124</td>
</tr>
<tr>
<td>Relationship between Social Phobia and Online Social Networking</td>
<td>76</td>
<td>.670</td>
<td>.240</td>
</tr>
</tbody>
</table>

The next two research questions examine the effect of overuse of the Internet on reported symptomology for depression and anxiety. The initial query concerned if reported symptoms of Internet addiction would increase along with reported symptoms of depression and anxiety. These results were then compared between the sexes, to see if any found correlations would vary by sex. The sexes experience psychopathology differently in both primary symptoms and occurrence percentage for anxiety, depression, and addiction. While both sexes combined may report a correlation, it is possible that the individual sex will report fewer symptoms on any measure and change the direction of the correlation or invalidate it altogether for that percentage of the sample.

**Research Question 12:** Will scores on addiction measures correlate in the same direction in students with anxiety or depression?

Spearman’s ρ, as the appropriate correlation coefficient, was examined for a statistically significant degree of correlation between a measure of symptoms of Internet addiction, reported symptoms of anxiety, and reported symptoms of depression. Analysis focused on if the direction was consistent or divergent between the measures depending on which measure the student obtains a significant score. A statistically significant
correlation in a positive direction was reported between scores on the IAT and scores on both the MAQ-T and the BDI-II (see Table 7). On both instruments, as students reported higher levels of symptoms of Internet addiction, symptomology reported for depression and anxiety also increased.

Table 7

*Intercorrelations between Measures of Internet Addiction, Depression and Anxiety*

<table>
<thead>
<tr>
<th>Source</th>
<th>Df</th>
<th>$\chi^2$</th>
<th>$p$</th>
<th>$\rho$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationship between the IAT and the MAQ-T</td>
<td>2484</td>
<td>2.942E3</td>
<td>.000</td>
<td>.294</td>
</tr>
<tr>
<td>Relationship between the IAT and the BDI-II</td>
<td>1104</td>
<td>1.632E3</td>
<td>.000</td>
<td>.274</td>
</tr>
<tr>
<td>Relationship between the MAQ-T and the BDI-II</td>
<td>1296</td>
<td>2.444E3</td>
<td>.000</td>
<td>.702</td>
</tr>
</tbody>
</table>

Research Question 13: Do scores on measures of psychopathology differ in amount of correlation between the sexes?

Spearman’s $\rho$, as the appropriate correlation coefficient, was examined for a statistically significant degree of correlation when separated out by sex, to examine if the significance in correlation existed between the sexes. For women, a statistically significant correlation in a positive direction was reported between scores on the IAT and both scores on the MAQ-T ($p=.000, n=217$) and the BDI-II ($p=.001, n=217$). In examining males, a statistically significant correlation in a positive direction was reported between scores on the IAT and both scores on the MAQ-T ($p=.014, n=112$) and the BDI-II. Both sexes were found to be as statistically significantly correlated as when examined separately.
Table 8

*Relationships between Measures of Internet Addiction, Depression and Anxiety Analyzed by Sex*

<table>
<thead>
<tr>
<th>Source</th>
<th>Df</th>
<th>$\chi^2$</th>
<th>$p$</th>
<th>$\rho$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Females</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationship between the IAT and the MAQ-T</td>
<td>2050</td>
<td>2.413E3</td>
<td>.000</td>
<td>.303</td>
</tr>
<tr>
<td>Relationship between the IAT and the BDI-II</td>
<td>984</td>
<td>1.306E3</td>
<td>.000</td>
<td>.234</td>
</tr>
<tr>
<td>Relationship between the MAQ-T and the BDI-II</td>
<td>1200</td>
<td>1.852E3</td>
<td>.000</td>
<td>.684</td>
</tr>
<tr>
<td>Males</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationship between the IAT and the MAQ-T</td>
<td>1295</td>
<td>1.321E3</td>
<td>.302</td>
<td>.267</td>
</tr>
<tr>
<td>Relationship between the IAT and the BDI-II</td>
<td>665</td>
<td>779.00</td>
<td>.001</td>
<td>.401</td>
</tr>
<tr>
<td>Relationship between the MAQ-T and the BDI-II</td>
<td>703</td>
<td>903.58</td>
<td>.000</td>
<td>.665</td>
</tr>
</tbody>
</table>

Research question 14: Is there a statistically significant difference between the sexes on the results of the measures utilized for Internet addiction, anxiety, or depression?

The mean of each measure was compared to examine any difference between the sexes on scores for the measures. An analysis of variance was utilized to explore relationships between means and responses by sex. For depression, no statistically significant relationship was found between levels of depression and reporting between sexes. For Internet addiction, no statistically significant difference was found between the sexes and self-report of symptomology of Internet addiction. For general anxiety, a statistically significant difference was found between the sexes and levels of anxiety (see
Table 9). The sexes reported statistically significant different levels of anxiety symptomology on the MAQ.

Table 9

*Analysis of Variance of Measure Results Between Sexes*

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>1</td>
<td>2.033</td>
<td>.155</td>
</tr>
<tr>
<td>Internet Addiction</td>
<td>1</td>
<td>.547</td>
<td>.460</td>
</tr>
<tr>
<td>Anxiety</td>
<td>1</td>
<td>4.463</td>
<td>.035</td>
</tr>
</tbody>
</table>

Research question 15: Is there a statistically significant difference between hours spent online engaged in online social networking and hours spent online total as reported by respondents (when compared by sex)?

The frequency of reported hours spent online was compared to the frequency of reported hours spent engaged in online social networking. These results were then delineated by sex. Due to the fact that answers to the amount of time spent online in any fashion were ranked in an ordinal fashion versus interval, a non-parametric analysis was used to compare the distribution of the samples. A statistically significant relationship was found between reported hours spent online when compared to hours spent engaged in online social networking, and this relationship existed for both sexes (see Table 10).
Table 10

*Chi Square Examination of Time Spent Online Between Sexes*

<table>
<thead>
<tr>
<th>Sex</th>
<th>Source</th>
<th>df</th>
<th>( \chi^2 )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>Hours Online Social Networking</td>
<td>4</td>
<td>166.269</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Hours Online Total</td>
<td>4</td>
<td>103.116</td>
<td>.000</td>
</tr>
<tr>
<td>Men</td>
<td>Hours Online Social Networking</td>
<td>4</td>
<td>95.364</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Hours Online Total</td>
<td>3</td>
<td>25.357</td>
<td></td>
</tr>
</tbody>
</table>
The following information highlights all of the significant findings and results detailed in this chapter.

Table 11

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Finding</th>
<th>Df</th>
<th>Calculated Statistic</th>
<th>Measure of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex Differences in Online Social Networking</td>
<td>Relationship between men and women’s use of online social networking</td>
<td>N/A</td>
<td>MR Women = 171.53</td>
<td>p = .019</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>MR Men = 147.73</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Specific Activity Differences: Personal Ads</td>
<td>N/A</td>
<td>MR Women = 161.34</td>
<td>p = .007</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>MR Men = 172.09</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Specific Activity Difference: Online Personal Networking Sites</td>
<td>N/A</td>
<td>MR Women = 178.06</td>
<td>p = .000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>MR Men = 139.69</td>
<td></td>
</tr>
<tr>
<td>Ranking Online Usage as Compared to Others</td>
<td>Males</td>
<td>N/A</td>
<td>MR Women = 158.38</td>
<td>p = .029</td>
</tr>
<tr>
<td></td>
<td>Females</td>
<td>N/A</td>
<td>MR Men = 177.82</td>
<td></td>
</tr>
<tr>
<td>Racial Group Differences between Online Social Networking</td>
<td>Online Social Networking Sites</td>
<td>N/A</td>
<td>$\chi^2 = 10.716$</td>
<td>p = .030</td>
</tr>
<tr>
<td>Classification Differences Between Online Social Networking</td>
<td></td>
<td>N/A</td>
<td>$\chi^2 = 17.720$</td>
<td>p = .001</td>
</tr>
<tr>
<td></td>
<td>Online Social Networking Sites</td>
<td>N/A</td>
<td>$\chi^2 = 11.753$</td>
<td>p = .000</td>
</tr>
<tr>
<td></td>
<td>Internet Addiction</td>
<td>4</td>
<td>F = 15.864</td>
<td>p = .000</td>
</tr>
<tr>
<td>Goodness of Fit in Relationships between various factors</td>
<td>Social Phobia</td>
<td>4</td>
<td>$F = 2.907$</td>
<td>$p = .022$</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>---------------</td>
<td>---</td>
<td>-------------</td>
<td>-----------</td>
</tr>
<tr>
<td>IAT compared to Online Social Networking</td>
<td>184</td>
<td></td>
<td>$\chi^2 = 2.979E2$</td>
<td>$p = .000$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intercorrelations between measures</th>
<th>IAT and MAQ-T</th>
<th>2484</th>
<th>$\chi^2 = 2.942E3$</th>
<th>$p = .000$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Females</td>
<td>2050</td>
<td></td>
<td>$\chi^2 = 2.413E3$</td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>1295</td>
<td></td>
<td>$\chi^2 = 1.321E3$</td>
<td>$p = .302$</td>
</tr>
<tr>
<td>IAT and BDI-II</td>
<td>1104</td>
<td></td>
<td>$\chi^2 = 1.632E3$</td>
<td>$p = .000$</td>
</tr>
<tr>
<td>Females</td>
<td>984</td>
<td></td>
<td>$\chi^2 = 1.306E3$</td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>665</td>
<td></td>
<td>$\chi^2 = 779.00$</td>
<td>$P = .001$</td>
</tr>
<tr>
<td>MAT-Q and BDI-II</td>
<td>1296</td>
<td></td>
<td>$\chi^2 = 2.444E3$</td>
<td>$p = .000$</td>
</tr>
<tr>
<td>Females</td>
<td>1200</td>
<td></td>
<td>$\chi^2 = 1.852E3$</td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>703</td>
<td></td>
<td>$\chi^2 = 903.58$</td>
<td>$p = .000$</td>
</tr>
</tbody>
</table>

| Variance of Measure Results between sexes              | 1             |     | $F = 4.463$        | $p = .035$ |

| Relationship between hours of online social networking and hours online total | Women – Hours Online Social Networking | 4 | $\chi^2 = 166.269$ | $p = .000$ |
|                                                                              | Women – Hours Online Total             | 4 | $\chi^2 = 103.116$ |           |
|                                                                              | Men – Hours Online Social Networking   | 4 | $\chi^2 = 95.364$  | $p = .000$ |
|                                                                              | Men – Hours Online Total               | 3 | $\chi^2 = 25.357$  |           |
Chapter 5

Conclusion

Statement of the Problem

College students utilize the Internet at an intersection of limitless high speed access and enlarging social spheres. College campuses were among the first locations to offer unfettered broadband Internet access, and students newly receiving this access were expected to police their own behavior. As the network of friends surrounding college students grows, the exposure to positive and negative feedback, as well as the amount of time spent engaging in social networking, increases exponentially. This study sought to determine if online social networking affects college students due to the unique method of computer mediated communication. It also sought to verify if higher levels of use of online social networking negatively affects the achieving of offline social capital. Students who are being negatively affected by their online exposure may show psychopathology such as symptoms of depression, (social) anxiety, and addiction to the medium. While it is difficult to determine if online social networking is the only cause of pathology, research can substantiate if the increased use of these applications is a contributor to a decrease in quality of life.

The focus of this study was determining what association may exist between excessive use of online social networking and selected emotional psychopathology generally expressed in relationships. Due to the mercurial nature of online reinforcement, students may develop depressive symptoms such as depressed mood, changes in sleep
habits, difficulty concentrating, or lack of energy, in response to a lack of constant support. In addition, the high levels of exposure may engender pathology displayed in a behavioral addiction, where students react negatively when they are not engaged in online social networking or utilizing the Internet. The lack of physical interaction in online social networking may reinforce or exacerbate symptoms of social phobia, so that individuals become even more likely to avoid situations that trigger the physiological and psychological reactions that occur. Anxiety can result from high expectations of online communication, such as instant intimacy and substantial levels of influence. The lack of congruence between offline and online styles of communication may cause rifts in in-person socialization when rules are misapplied in inappropriate settings.

**Statement of Procedures**

Participants in the study consisted of a convenience sample of undergraduate students enrolled in career decision-making classes at a southeastern university. Students were assumed to have regular exposure to the Internet and to be able to utilize high speed connections for academic and leisure purposes. Students were also assumed to have minimal knowledge of social networking tools and how to use the Internet for daily activities such as email, instant messaging, news, commerce, or online social networking. Four measures—the Multidimensional Anxiety Questionnaire, the Internet Addiction Test, the Beck Depression Inventory, and the Student Internet Use survey—were administered as one combined questionnaire. The selected assessments captured what they purported to measure, had research validating the strength of the measures, and possessed prominence in the counseling field. The study used a longer combined questionnaire instead of individual assessments to lower the potential that students would recognize
what pathology each measure was attempting to capture. Gathered demographic information excluded anything that could be used to associate particular student with a response set. Only the researcher had access to the questionnaires and resultant data analysis. Students received an informed consent document explaining the purpose of the research, providing contact information on the researchers, and detailing lack of risk. All of the students who were given the survey in their classes chose to participate. One classroom ran out of time to complete the survey; all but five of those students stayed after class to complete the survey.

The data returned by the respondents were analyzed using descriptive and inferential statistics to determine significant differences in use of online social networking between sexes, racial groups, or classifications. Parametric and non-parametric analysis of variance was conducted on the descriptive statistics to evaluate variation between values for each group on the measures. The relationship between the total values scored on the measures and reported time spent online was examined and tested for the degree each measure contributed to the overall significance through correlations.

**Research Hypotheses Used**

The researcher chose to use research questions over hypotheses due to the exploratory nature of this study. While concrete ideas grounded the development of the research questions, guidance for the direction of the analysis resulted from the questions rather than definite conclusions about what answers the data might hold. The overarching concern of the study was identifying both the amount of measureable psychopathology the subjects reported, and how this psychopathology compared to the amount of time
students spend engaged in online social networking. The choices of specific psychopathology were based partially on the literature and partially on problems stated by college students presenting for counseling. An additional focus of the study concerned determining the potential that the identified psychopathology had on affecting offline relationships.

The initial research questions were drafted with an eye towards analyzing the differences of the use of online social networking between groups: sexes, racial groups, and classification. Another question addressed the relationship between the self-perception of personal use among the groups, and how much each group believed they utilized online social networking or the Internet compared to the average college student. This led into questions about the relationship between online social networking and offline friendship development, and if there was a positive or negative correlation between the two. An interrelated group of research questions addressed the interplay that the various types of psychopathology might have on the incidence of overuse of online social networking. The data were examined for relationships between the amount of time spent engaging in online social networking and the direction of scores on the measures of depression, anxiety, social phobia, and Internet addiction.

**Discussion**

Online social networking is a complex form of communication that has its roots in the human need for contact. Instant group communication offers many positives to individuals and societies, but the rapid evolution of technology as compared to humanity guarantees that some negative repercussions will unfold. Social behavior and technology both advance in response to need, but social behavior advances over decades and perhaps
centuries while technology advances sometimes weekly. The lag between these two is evident in the vast gulf between the development of mores and rules in physical society versus online social etiquette. When communication shifted from driven by people to pushed by advances in technology, the social adaptation to the differences between old and new types of communication diminished in pace. Unremitting connectedness disallows for downtime, for the rest period that many people need to recharge the energy sapped by human interaction. Lack of energy can certainly be a symptom of several mental and physical health issues, causing a vicious cycle in which the individual loses energy and has no opportunities to restore it. Disinhibition is a unique phenomenon inherent to online communication, and the hurt feelings that can result from uncensored discussion and commentary affect life in many more sectors than simply online (Suler, 2004). Humans are reliant on positive personal interactions (an idea that originated with Aristotle). The study of social psychology shows that lack of those through sheer carelessness or thoughtlessness can cause a host of effects resembling anything from anxiety to trauma. Lack of emotional cues intrinsic to electronic correspondence leave the reader clueless as to the appropriate responses that need to be made. Confusion in communication can lead to negative emotional side effects that express in physical and mental ways. (For a more thorough discussion on this topic, please refer to *The Social Animal*, Elliot Aronson).

Specifically in this study, all of the above issues were illuminated in the comparisons of various psychopathologies and the amount of influence online social networking may have had in their establishment and development. It is not possible at this stage to definitely state which hypotheses are more likely to be truth, when discussing
what precise negative effects overuse of online social networking possesses. This research did shed some light some associations that can be made between symptoms of Internet addiction, overuse of online social networking, overuse of the Internet, and definite psychopathologies.

Considering the ambiguity of the results of the studies done by Kraut (Kraut et al, 1996, Kraut et al, 2002, Williams, 2006) this study chose to examine if depression was linked to psychopathology. The results of this study confirmed the later Kraut study in that there was no significant association of depression as a diagnosis with overuse of the Internet. However, depressive symptomology was increasingly reported as the individual spent more time engaging in online social networking. This increase was common to both men and women involved in the study. Previous studies along this vein also examined the amount of offline social networks and the increased usage of online social networking. Studies stated that there was no definite link between increased amount of time spent online and decreased time spent acquiring offline social capital (Wellman, Haase, Witte, & Hampton, 2001; Ellison, Steinfield, & Lampe, 2007; Williams, 2006). This study found no significant link between offline social networks and online social networking. There was also no established correlation between higher levels of time spent engaging in online social networking and lowered percentages of offline networks or time devoted to the nurturing of these networks. For this sample, the time spent in establishing and maintaining online communities is not coming at the sacrifice of time spent on real world social networks.

Earlier research studies on heavy online communication and symptoms of Internet addiction also presented some ambiguity in their results. There was no consistent
definition of what represented Internet addiction; some studies discussed overuse of specific media, some studies discussed detailed side effects based on relevant technologies, while other studies discussed resultant maladaptive behaviors (c.f. Bargh & McKenna, 2001; Fox, Rosen, & Crawford, 2009; Tong, Van Der Heide, Langwell, & Walther, 2008; Mazalin & Moore, 2004). The current study utilized a specific measure of addiction (the Internet Addiction Test) to compare symptoms of overuse of the Internet to amounts of time spent engaging in online social networking. A significant link was found between Internet addiction symptomology and overuse of online social networking. A correlation was also found between reports of more symptomology on the IAT and higher levels of online social networking and Internet usage in general. This is a general trend previously established by the usage of the IAT (Young, 1998).

A clear pop culture assumption has been made about social phobia and usage of the Internet, with the media and the populace believing that people who spent copious amounts of time on the Internet are socially withdrawn and unable to build strong face to face networks. In the achievement of social capital, those lacking in the development of substantial networks in the real world were seen as lacking. Prior research has demonstrated, however, that there is not a clear link between centering social networks in online communities and development of psychopathology (Kraut, et al, 2002). This study examined the data for any link between usage of online social networking and social phobia and anxiety. There was no significant relationship between reported symptomology of general anxiety and online social networking usage, or between social anxiety and online social networking usage. There was a significant relationship found between usage of online social networking and symptomatology of social phobia. Due to
the symptomology inherent in social phobia, there is no conclusion drawn based on whether social phobia is the result of the overuse of online social networking, or whether the overuse of online social networking is a symptom of social phobia. In addition, a significant positive relationship was found between amount of time spent engaged in online social networking and higher scores on the measure for general anxiety. No significant relationship was found between amount of time spent engaged in online social networking and social anxiety or social phobia. In essence, symptoms of general anxiety were related to increased time spent engaging in online social networking, and symptoms of social phobia were explicitly related to online social networking usage.

**Implications**

This study did support previous findings about sex usage of online social networking. Females statistically engaged in higher usage levels of online social networking (Baron, 2004), while the sexes reported using other Internet activities and applications in equal amounts. The bulk of research and treatment focuses on males involved in addictive behaviors such as pornography, gambling, prostitution, and online gaming (Neimz, Griffiths, & Banyard, 2005).

A thorough discussion on the female usage of the Internet in such behaviors as online commerce and social networking has not been fully realized. However, as this study reported, the percentage of time spent engaged in online social networking when compared total time online is equally significant for men as for women. While women may utilize online social networking more than men, both sexes utilize online social networking for a significant amount of their online leisure time. Previous research and this study have demonstrated that female online usage patterns diverge from male online
usage patterns, with differing emphases in activities. A therapist utilizing an instrument or clinical interview that is attempting to ascertain misuse of the Internet in clients should consider that asking the same questions of both sexes may not capture an accurate picture. Querying solely about gaming or personal ads would probably miss female problematic usage, while addressing online social networking solely might fail to detect males’ other Internet misuse activities. As online social networking is a phenomenon that cannot exist independently of the Internet, and only will increase over time, treatment considerations should focus more on the problems inherent in the Internet as a medium versus behaviors committed on the Internet. The Internet can easily facilitate maladaptive behaviors such as gambling, stalking or harassment, porn addiction or trading illegal forms of pornography, or playing games. All of these activities occur outside of the Internet, and have been discussed as negative coping mechanisms for some time. It then becomes necessary to separate individuals’ predisposed behavior versus habits that only exist through the Internet, such as online social networking or posting comments to message boards.

Additionally, cultural discourse about the Internet has assumed a distinct lack of racial minority presence. While there was a reported significant difference between certain racial groups on the use of online social networking, that distinction did not exist in this study around Internet usage in general. Racial minority Internet users are catching up to their majority counterparts due to the proliferation of computers in the average household; a discussion is overdue about how racial minorities may approach online social networking differently than students of majority racial background. It would also
be interesting to examine those of multi-racial background—which group would they be more likely to identify with and resemble in the research?

The field of counseling psychology distinctly focuses on the areas of education and training, scientific investigation, practice, and diversity and public interest in professional psychology (Society of Counseling Psychology, 2010). With higher emphasis on evidence based practice and empirically supported treatment, anecdotal maladaptive behaviors that increasingly appear with clients suggest more research. In the field, the appearance of various behavioral addictions has seemed to flourish, but many of them are not yet identified, defined, or supported by research. Practitioners may need validated symptom lists and identifiable factors for diagnoses and insurance reimbursement, and be required to show treatment measures are supported by studies.

Technology development increases at an exponential rate, and scientists and practitioners must engage in research to advance the indicated maladaptive behaviors and related treatments.

All college undergraduate students, regardless of classification, were significantly alike in their reported use of online social networking. The information given to incoming students about using Facebook and MySpace to distraction should not be abandoned when a student becomes an upperclassman. Just like any other skill maintained over time, students should be encouraged to continue to moderate usage of online social networking at a healthy level. The material discussed in these results targets at counselors, but many different student affairs professionals should consider the effect of excessive online social networking and Internet use in general as it relates to their area. Many factors play into problematic student retention rates, but interference of technology
with student success is new and growing. As technology integrates more in campus life, more students display maladaptive behaviors in front of student affairs staff. The issues raised from these negative coping mechanisms are complex in the student affairs realm due to the many factors that have to be taken into account. Colleges and universities have taken on a great deal of responsibility for the health and well being of their students, with the resultant risk when student behavior spirals out of control. Case law shows that campuses have been found responsible for student incidents through not having adequate policy, not following established policies, or violating established standards of care. As risk management becomes integral to campus functioning, staff must be aware of potential problems and cognizant of related research on developing issues. This research can guide implementation of appropriate, compassionate guidelines that both help individuals and protect the integrity of the campus as a whole.

Orientation is an excellent starting point for disseminating tips on appropriate online use. Orientation leaders can hold discussions with both students and parents on the positive and negative consequences of Internet use. Parents need this information to best help their young adults who may call home asking about what decisions to make, or who need gentle reminders about making smart choices. Other professionals can come and speak at orientation to share the impact that misuse of the Internet has on a student’s academic success and personal life. After students are engaged in the hectic ebb and flow that is college life, reminders about appropriate online behavior should and can come from many different angles. Instructors should pay attention to what students are doing on laptops in class; many students “multitask” during lectures with online social networking. A policy on desired behavior in the classroom would not be out of order in
this case. Health educators, who are already out on campus doing student outreach, should consider adding smart Internet behavior to their roster of presentations. Campuses could do outreaches aimed at students that emphasized continued smart, thoughtful use of the Internet with techniques such as taking breaks from the Internet, carefully policing their online presence, etc. These presentations can be targeted at organizations such as sororities, fraternities, or clubs that may have a direct interest in the subject matter. Certain classes may also be conducive to the subject matter being presented, such as communication, computer science, or information technology. Career classes are also a good place to integrate this material, as the discussions about online presentation become more and more important. The career center can spearhead and support this effort when students come in for consultations about the best ways to get interviews, act in a professional manner, etc. Away from academics, housing staff can be trained to spot problem behaviors in Internet use, such as missing classes, spending all free time in the room, reclusive behavior, loss of friendships or interactive behavior, and other symptoms that might necessitate a referral or immediate intervention. This effort is campus wide, and requires staff and faculty performing various functions to be educated to the negative repercussions of Internet misuse.

When considering issues to cover in an assessment instrument, specific points are both grounded in known maladaptive Internet behaviors, and characteristics of behavioral addictions. The following topics relate both to the qualities that define maladaptive behavior and unique attributes of online application. (See Appendix A for a sample assessment measure.)
• Amount of time spent online per day/week, and how much of that time is utilized for non-leisure activities
• Time spent using the Internet instead of schoolwork, or spending time online that replaces time spent engaging in other hobbies
• Losing track of amount of time spent on the Internet, not being able to moderate time spent online
• Preferring online friends to offline friends, having better relationships with people online as compared to offline, alienating offline friends to spend more time online, having disproportionate amounts of online friends as compared to offline friends
• Anger at being unable to use the Internet, avoidance of activities that would preclude use of the Internet, utilizing the Internet on portable devices at inappropriate times
• Lying about time spent online, hiding online usage from others, those around being distressed about the amount of time spent online
• Spending excessive amounts of money on Internet related activities or merchandise, utilizing the Internet to engage in other maladaptive behaviors
• Time spent on the Internet causing difficulties in interpersonal relations, engaging in behaviors online that are out of character in real life, judging those not as familiar with the Internet
Limitations

These results cannot be used for an establishment of causality due to the possibility of concurrent disorders with similar symptoms, the psychopathology being a preexisting condition not related to online social networking, and need for differential diagnosis for symptoms that identify more than one mental illness. The scope of this research is generally exploratory in nature, with the results presented more as directions for further research than standalone reasons motivating negative behavior. The results of the measures were not used to attempt to diagnose any of the psychopathology queried, but to identify an amount of distress reported by the student. An additional qualitative interview would be necessary to identify diagnoses and associate those diagnoses with the incidence of excessive use of online social networking. Individuals tend to underreport on self-administered surveys to impress the administrator, minimize negative appearance, avoid detection of mental illness, or evade negative consequences. A personal interview counteracts this fact when attempting diagnosis. These students received surveys amidst their classmates—everyone taking the survey would be vaguely aware of what other answers could look like and think it possible that others taking the questionnaire would know what answers they were marking. Saving face would certainly be more important than answering openly and honestly, especially with the (unnecessary but existing) concern that instructors might also be privy to the results. It would take a seasoned clinician who had established confidentiality to determine the amount of psychopathology that actually existed among the student sample studied.

Results based on the demographic information of the students surveyed cannot readily be extrapolated to the general college student population. This research occurred
at a large, competitive research institution, which tends to have a student body that focuses on academics and averages higher GPAs than other types of institutions. Geographical localization of the student body limits the generalization to other regions of the country where patterns in Internet use and psychopathology may differ. While the sample did adequately represent the diversity in the student population of this school, the results may not generalize to the broader population not reflected by the cultural makeup of the surveyed subset. In addition, the college population is not indicative of the demographics of the population of the United States; groupings differ through racial and racial minority status, socio-economics, average level of education, practical understanding of technology, and so forth.

**Recommendations for Further Research**

The possibilities for future research concerning the intersection of psychopathology and Internet usage are almost endless, but in the following paragraphs only discuss a selection directly related to the limitations and findings of this study. They include enlarging the scope of the study to cover a more diverse population, broadening the sample to analyze various geographical locations for potential differences, adding measures of additional psychopathologies to compare to usage of online social networking, the role of qualitative research in gathering information, and evaluating the college population with pre-existing diagnoses to differentiate between issues caused by excessive Internet use and other conditions.

The sample analyzed in this study, while representative of the institution population as a whole (UGA, 2008), was not representative of the population of all college-attending students in the United States. Current available census results show a
higher level of racial minorities and individuals who report themselves as having multi-racial backgrounds than the respondents in the study indicated. Racial groups in the non-college student population may report different results on the measures, and online social networking usage, when surveyed as a larger group. Many factors constitute online social networking usage, such as peer influence, exposure to the Internet, desire to keep in contact with friends and associates, or need for information on current events. Not all individuals have the same experience growing up, nor the same exposure to technology and resources that would allow for even a passing knowledge of the Internet. In contrast, other groups may need the Internet to communicate with relatives in far off places or have online habits cultivated in another country (for example, China and Japan have vastly differing online cultures than the United States).

Internet preferences might also vary according to geographical region. Just as music is a regional taste, with many singular musical types originating from various locations, local flavor may run to specific websites or applications. When enlarged to the international level, this is even more evident. Russian Internet use is focused more as a social activity, with Internet cafes predominating over individuals owning computers in their own homes. While college students in the United States use Facebook for online social networking, students in Europe use Badoo or Viadeo, hi5 is popular in Asia, and Australian students might be using MyLOL. High school and college students in China and Japan surf the Internet in higher numbers on their mobile phones than on desktop computers.

The chosen psychopathologies for these students represented the most highly occurring symptomology among college students, but were only a small sample of
potential diagnoses that could be concurrent with overuse of the Internet and online social networking. A more exhaustive list should be created from observed symptoms of those who misuse the Internet and compared to the general population of college students across the United States. While depression and anxiety are hallmarks of addictive behavior, other pathology should be considered such as personality disorders, antisocial behaviors, acute trauma or post traumatic stress disorder, and other phobias in addition to social phobia. Each instrument may well capture the reported symptoms of maladaptive behavior, but it would also be important to determine the contribution of the various pathologies to the overall state of each individual’s mental health. An individual who is reporting mild symptoms of depression and severe symptoms of social phobia might need different treatment objectives than an individual who presented with mild symptoms of Internet addiction but severe symptoms of a personality disorder. Instruments should be carefully researched and compared across reported statistics of reliability, and ranked as to their strengths and weakness in assisting diagnosis.

In addition to the exploratory research presented here, confounding variables exist that might affect the conclusions provided in the data. Additional factors might include different periods in the semester, e.g. the start of school versus the week before finals, peak homework periods as compared to times of fewer assignments, new online social networking platforms for which students might be early adopters, or well attended school activities such as football games and popular social holidays. Several different types of research may fit here to examine further questions, including time series or mixed method analyses. Potential patterns can guide on-campus interventions such as outreaches,
trainings for housing personnel, targeted interventions at the counseling center, and increased faculty awareness.

It is impossible to provide a thorough assessment of emotional functioning without some sort of interview process. A competent clinician recognizes that with the tendency of individuals to underreport on measures, an additional interview provides a fuller picture of the functioning of the individual on a daily basis and patterns over time of dysfunction. Quantitative data analysis should be combined with information gathered in a clinical interview to determine what kind of psychopathology and degree exists in those surveyed. This combination of information supplies more thorough data in ascertaining not only how much psychopathology is present, but also some sources of symptomology reported by study participants. Doing so corroborates the results in a solid fashion and provides guidance to clinicians interested in using the data for diagnosis and treatment planning purposes.

Ultimately, it is time treatment specialists considered the larger ramifications of the intersection of the Internet and psychopathology. Individuals who may not have developed problems based on the absence of a constant connection will now be able to explore a world that they may not have the willpower to use to remove themselves. The status, presence, and infamy that only exists for a select few in the “real world” is available to quite a larger cross section of the population online. At the same time, the inhibitors that exist to regulate human interaction in the real world are almost non-existent on the Internet. Irreparable harm can occur through the thoughtless words or actions of another with which the user doesn’t even directly interact. Therapists need to be aware of the differences that exist between damaging real life relationships and
damaging online relationships, including speedy intimacy, unreasonable expectations for relationship outcomes, unnatural levels of attachment, poor judgment surrounding personal resources, etc. At the same time, the similarities must be taken into account so that the problems are not dismissed. These relationships, while varying from their real life counterparts, cause the same degree of emotional psychopathology. Clients need help navigating all relationships, regardless of their origin.
References


Niemz, K., Griffiths, M., & Banyard, P. (2005). Prevalence of pathological Internet use among university students and correlations with self-esteem, the General Health Questionnaire (GHQ), and disinhibition. *CyberPsychology & Behavior, 8*(6), 562-570.


Appendix A

Internet Misuse Assessment Questionnaire

1. How much time do you spend on the Internet per day? Per week?

2. Do you engage in schoolwork or work related activities on the Internet, or do you spend most of your time in leisure activities?

3. Do you find that time spent on the Internet is at the expense of other activities you should be doing?

4. Do you spend time on the Internet instead of participating in previous hobbies?

5. Do you prefer to interact with people online as compared to offline?

6. Do you have few offline friends, but many online friends?

7. Has your Internet usage caused distress in other areas of your life?

8. Do you find that you become angry or upset when you are unable to use the Internet?

9. Do you avoid activities that would disrupt your continuous online status?

10. Do you surf the Internet using other devices besides the computer, such as smart phones or the iTouch/iPad, during times it might be considered inappropriate?

11. Do you spend more money than you intend to on Internet related activities?

12. Do you misrepresent the time you spend online to others?
13. Has someone you know expressed concern about the amount of time you spend online?

14. Has the time you spend online contributed to problems in your interpersonal interactions (romantic relationships, friendships, organizations, colleagues)?

15. Do you find yourself unable to control the amount of time you spend online?

16. Do you find yourself judging people who are not as ‘net savvy’ as you are?

17. Do you engage in behavior online that is out of character for you offline?

18. Do you use the Internet to facilitate other, potentially negative behaviors (such as gambling, pornography, excessive shopping, or pursuing illegal substances)?

19. Do you deny that there is a problem when discussed, even if you have noticed negative repercussions from your online behavior?

20. Do you lose track of time while on the Internet, feeling as if you “blacked out” or lost a period of time while online?