PATHOLOGICAL INTERNET USE AMONG COLLEGE STUDENTS:
THE PREVALENCE OF PATHOLOGICAL INTERNET USE AND ITS CORRELATES

A Dissertation Presented to
The Faculty of the College of Education of
Ohio University

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

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March 2004
This dissertation entitled
PATHOLOGICAL INTERNET USE AMONG COLLEGE STUDENTS:
THE PREVALANCE OF PATHOLOGICAL INTERNET USE
AND ITS CORRELATES

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Seven hundred thirty-one traditional age (18-24) college students from a large Midwestern university were assessed with an online survey for an impulse control disorder related to their Internet use. Students reporting four or more symptoms of an impulse control disorder related to their Internet use were categorized as Pathological Internet Users. Seven percent of students in the present study met criteria for Pathological Internet Use. The results of the present study suggest that male students may be significantly more likely to engage in Pathological Internet Use than female students. The present study predicted that freshmen (first-year) students would report significantly more symptoms of Pathological Internet Use than upperclassmen. However, this study did not find significant differences in terms of pathological behaviors or cognitions based class standing. The students were also asked to report on how their Internet use impacted various areas of functioning including: current relationships, academic success, getting adequate sleep, and being late for or missing classes. Only 1.2% of students reported their Internet use had negatively impacted their current relationships while 7.9% reported negative impacts on their academic success, 14% reported negative impacts on being late for or missing classes, and 20.7% reported negative impacts on their ability to get enough sleep. Suggestions and considerations are
offered for conducting further research online. Finally, the present study offers suggestions for future research of Pathological Internet Use in the college student population and general population.

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Acknowledgements

First, I would like to thank Tom Davis for his guidance and support as my advisor and dissertation chair. I would like to thank my dissertation committee members Gordon Brooks, Dana Heller-Levitt, and George Johanson for their feedback that helped to improve this project and my personal research skills. Additionally, I thank Richard Davis for allowing me to utilize portions of his Online Cognitions Scale. Many thanks also go to David Hannum for his technical support in developing the online survey and to Michael Williford for his assistance in obtaining the random sample of student email addresses. Thanks to my parents Mike and Peggi DiNicola for always being there throughout my academic career and life in general. Finally, I would like to thank my wife, Jenny DiNicola, for her support and encouragement in this long process.
Table of Contents

CHAPTER ONE: INTRODUCTION................................................................................12

Background of the Study .......................................................................................12

Pathological Internet Use Defined ........................................................................13

Pathological Internet Use in the College Student Population ............................15

Statement of the Problem .......................................................................................18

Significance ...........................................................................................................20

Primary Research Questions ..................................................................................22

Definitions Relevant to the Present Study .............................................................23

Delimitations and Limitations of the Study ............................................................25

Delimitations of the Study .....................................................................................25

Limitations of the Study .........................................................................................26

CHAPTER TWO: REVIEW OF THE LITERATURE .....................................................30

Introduction to the Literature .................................................................................30

General Theories of Pathological Internet Use (PIU) ...........................................31

Goldberg’s Internet Addiction Theory ....................................................................31

Davis’ Cognitive-Behavioral Model of PIU .........................................................34

Suler’s Eight Factors of PIU .................................................................................39

Grohol’s Three Stage Model of PIU ......................................................................41

Hall & Parson’s Internet Behavior Dependency ..................................................43

Challenges to PIU Theories and Research ............................................................45

Theories of Pathological Internet Use Related to College Students .................48

Kandell’s Theory of College Student Internet Use ..............................................48
Chickering’s College Student Development Theory and PIU......51
General Research of Pathological Internet Use ..............................53
Young’s Internet Addiction Research ........................................53
Brenner’s Internet Addiction Research .....................................59
Armstrong, Phillips, and Saling’s Internet Addiction Research ....61
Research of Pathological Internet Use Related to College Students ....63
Anderson’s Internet Addiction Research .................................63
Scherer’s Internet Dependency Research ................................68
Davis, Smith, Rodrigue, and Pulvers’ IAD Research ...............69
Morahan-Martin and Schumacher’s PIU Research ....................71
Kubey, Lavin, and Barrows’ Internet Dependency Research ........73
Davis, Flett, and Besser’s Problematic Internet Use Research ......77
Summary of the Literature .......................................................80

CHAPTER THREE: METHODOLOGY ..........................................83
Primary Research Questions and Hypotheses .............................83
Identification of the Population .................................................84
Data Collection Procedures ....................................................84
Instrumentation .......................................................................86
Demographic Information Sheet .............................................86
Cognitive-Behavioral Checklist ...............................................87
Online Cognitions Scale .........................................................89
Operational Definition of Variables .........................................90
Data Analysis Procedures .................................................................93
Two-way ANOVA Considerations .......................................................95
Assumptions of the Data .................................................................96

CHAPTER FOUR: RESULTS .................................................................97
Sample Demographics .....................................................................97
Research Question 1 .................................................................98
Research Question 2 ..................................................................108
Research Question 3 ..................................................................109
Research Question 4 ..................................................................111
Supplemental Data ......................................................................114

CHAPTER FIVE: SUMMARY AND CONCLUSIONS ...........................119
Summary of the Study ..................................................................119
Advantages and Challenges of Online Research ............................121
Advantages of Online Research ....................................................121
Challenges of Online Research .....................................................122
Recommendations for Future Online Research ...............................124
Conclusions ................................................................................127
  Research Question 1 .................................................................127
  Research Question 2 .................................................................133
  Research Question 3 .................................................................134
  Research Question 4 .................................................................139
Recommendations for Counseling and Higher Education .............142
Summary and Recommendations for Future Research..............................144

REFERENCES ................................................................................................................149

APPENDIX A: Request for Exempt Status.................................................................157

APPENDIX B: Project Outline Form for Institutional Review Board.......................160

APPENDIX C: Demographic Information Sheet .......................................................182

APPENDIX D: Cognitive-Behavioral Checklist (CBC) ..............................................184

APPENDIX E: Online Cognitions Scale (OCS) .........................................................186

APPENDIX F: Permission to Use OCS .................................................................190

APPENDIX G: Permission to Use OCS Online ...........................................................192

APPENDIX H: Permission to Modify OCS ...............................................................194

APPENDIX I: Online Survey .....................................................................................196

APPENDIX J: Recruiting Flyers .............................................................................203

APPENDIX K: Recruiting Email Message .................................................................206

LIST OF FIGURES

FIGURE 1: Davis’ Cognitive-Behavioral Model of Pathological Internet Use (PIU) ..... 35

FIGURE 2: Grohol’s Model of Pathological Internet Use (PIU) .................................42

LIST OF TABLES

TABLE 1: Comparison of Pathological and Non-Pathological Internet Users ........99

TABLE 2: PIU Comparisons by Class Standing ......................................................100

TABLE 3: PIU Symptoms Reported ......................................................................105

TABLE 4: PIU Symptoms Reported by Class Standing .........................................106

TABLE 5: Number of PIU Symptoms Reported – All Students ............................107
TABLE 6: Number of PIU Symptoms Reported by Pathological Internet Users ........108
TABLE 7: Two-way ANOVA analyzing Group Differences by Class Standing and Gender..............................................................................................................................110
TABLE 8: Average Number of PIU Symptoms Reported by Gender and Class Standing ...........................................................................................................................113
TABLE 9: Internet Use Impact on Various Areas of Functioning .........................116
TABLE 10: Correlations of OCS-subscales, Hours Online, and PIU Symptoms ........117
TABLE 11: Correlations of OCS-subscales, Hours Online, and PIU Symptoms ........118
CHAPTER ONE:
INTRODUCTION

Background of the Study

The growth of the Internet has impacted almost every facet of life in the United States and most developed countries. This technology has changed the way people interact, shop, search for jobs, get directions, how they work, and how they spend leisure time. This list could include an almost unlimited number of other ways in which the Internet has changed people’s lives. In most cases, utilization of the Internet has improved people’s lives with its ease of use and ever-growing amount of content. However, in some cases excessive use of the Internet has been linked to significant impairment in critical areas of functioning including social, academic, career, and physical health (Anderson, 2001; Grohol, 1997; Young, 1998). Therefore, Pathological Internet Use (PIU) has become a growing area of concern, interest, research, and debate.

PIU is a psychological dependence on the Internet (Kandell, 1998). Historically, PIU has been “characterized by (a) an increasing investment of resources (time, energy, money, etc.) in Internet-related activities, (b) unpleasant feelings (anxiety, depression, emptiness) when offline, (c) an increasing tolerance to the effects of being online, and (d) denial of the problematic behaviors” (Kandell, 1998). Essentially, Internet use becomes pathological when it interferes with one or more major areas of life functioning such as significant relationships, occupation, school, mental health, or physical health (Holmes, 1997).
Previous definitions (Goldberg, 1996; Young, 1997; Kandell, 1998) of PIU have focused assessments of Internet-related behaviors via self-reported symptoms on checklists. The major problem with these checklists is that they may be tainted by subjects’ attempts to adhere to perceived rules of social appropriateness (Davis, Flett, & Besser, 2002). The present study will focus upon the assessment of self-reported cognitions, behaviors, and negative outcomes related to Internet use. The present study employs a checklist based on previous studies (Anderson, 2001; Armstrong, Phillips, and Saling, 2000; Young, 1998), but the items are updated to reflect the way college students currently use the Internet. The present study seeks to place additional emphasis upon the cognitions involved in PIU. The assumption being that persons using the Internet in a pathological manner think differently than healthy Internet users and will therefore report different thoughts about their time online (Davis, 2001b). The primary assessment utilized attempts to eliminate previous PIU screening questions that have become obsolete due to the evolution of the Internet. The assessment employed also seeks to de-emphasize screening questions which focus only on the amount of time spent online and include questions that add the dimension of cognitions associated with the type of content accessed online. Additionally, the present study will seek to explore potential correlates of PIU and group differences among college student Internet users. The findings of this study may be useful to professionals in various educational and mental health settings.

Pathological Internet Use Defined

Despite the lack of agreement among various studies and operational definitions of PIU, many of the operational definitions of the disorder could meet the established...
criteria for an Impulse-Control Disorder Not Otherwise Specified based on current the American Psychiatric Association’s Diagnostic and Statistical Manual of Mental Disorders (2000) criteria (Anderson, 2001; Beard & Wolf, 2001; Shapira, Goldsmith, Keck, Khosla, & McElroy, 1999; Young, 1998). The essential trait of an impulse control disorder is the inability to control an urge to perform an act that is harmful to the individual or others (DSM-IV-TR). Typically, the individual feels a growing sense of tension or arousal prior to committing the action. While the action is in progress, the individual may have feelings of gratification, pleasure, or relief. The positive feelings might be followed by guilt, regret, or self-reproach. The following nine criteria are consistently supported in the literature (Anderson, 2001; Armstrong, et al., 2000; Morahan-Martin & Schumacher, 2000; Scherer, 1997; Young & Rogers, 1998) and are consistent with DSM-IV-TR criteria for a person suffering from an impulse control disorder: (a) preoccupation with the Internet or Internet related activities, (b) tolerance in terms of a need to spend increasing amounts of time online in order to achieve desired excitement, (c) repeated attempts to control, reduce, or stop Internet use or to avoid a particular type of content, (d) withdrawal symptoms including restless or irritability when attempting to cut down or stop Internet use, (e) Internet use to escape problems or as a means of relieving dysphoric mood (e.g., helplessness, guilt, anxiety, depression), (f) lying to family members, significant others, employers, or therapist to conceal extent of involvement with the Internet or type of content accessed online, (g) Has committed illegal acts online (e.g., hacking into computer networks, copying files illegally, downloading illegal content), but not including swapping or sharing of music files, (h)
has jeopardized or lost a significant relationship, job or educational opportunity because of involvement with the Internet, (i) guilt about the amount of time spent online and/ or guilt related to the activities engaged in online. These nine criteria will be a major focus of the literature review and the present study due to their parsimony and heuristic value.

Pathological Internet Use in the College Student Population

Since the mid 1990’s, Internet use has skyrocketed among all segments of the US population and especially on America’s college campuses (Jones, 2002). College students were one of the first groups to utilize the Internet on a large scale, and among the first to begin experiencing problems associated with excessive Internet use. The current generation of college students grew up at a time when the Internet was probably introduced into their lives at a very young age (Jones, 2002). Furthermore, residential college students live and work in an environment that is conducive to PIU (Kandell, 1998). Internet use is the norm in the college student population and is essentially required by most colleges and universities. Even as this project was under construction, the Internet has grown substantially in relation to the ease of Internet access and means of access such as wireless hubs, cellular phones, and personal digital assistants that all provide new routes to the Internet.

Whether or not a person can become psychologically addicted or dependent on the Internet and whether PIU should be added to the next revision of the Diagnostic and Statistical Manual of Mental of Disorders-Fourth Edition (DSM-IV-TR) as a clinical disorder are still unanswered questions (Shaffer, 2002). However, the research clearly indicates that some individuals are experiencing negative consequences from their time
spent online (Anderson, 2001; Brenner, 1997; Morahan-Martin & Schumacher, 2000). Furthermore, a brief search on the Internet can demonstrate that there are already clinicians willing to offer treatment for this very new problem without much quality research to back up their actions. Therefore, in order to better define the problem of PIU and determine best practices for treatment, additional research is warranted.

Dr. Ivan Goldberg (1996) was the first to use the term Internet Addiction Disorder. Goldberg’s original term was known as Pathological Computer Use Disorder. Goldberg (1996) first proposed the term Internet Addiction on an online message board. Initially, Goldberg offered his definition of Internet Addiction as a joke, but was subsequently overwhelmed by the response of individuals who responded to his message with serious concerns about their own or others’ Internet use. Later, Goldberg (1997) recommended that the term Pathological Computer Use was more appropriate than Internet Addiction to describe individuals spending excessive amounts of time online and experiencing negative consequences as a result.

Goldberg (1996, 1997) is not alone in proposing definitions of Internet Addiction, PIU, or Pathological Computer Use. Anderson (2001), Greenfield (2001), Grohol (1999), Hall and Parsons (2001), Young (1997), and others have proposed their own definitions of PIU. The construct of PIU has also been called many names in the literature and research such as Computer Addiction, Internet Addiction Disorder, Problematic Internet Use, and Cyber Addiction (Orzack & Orzack, 1999). Many other writers have offered their opinions and critiques of these definitions and a scant amount of empirical research has been conducted to date. This scarcity of empirical research into the phenomenon
known as PIU suggests a need for further research. The scarcity of quality research in this area is even greater when subpopulations such as the college student population are considered, thus providing the justification for the present study.

Dr. Kimberly Young’s (1996) research ignited considerable debate and interest from the research community and general public. Young (1998) constructed a study that involved using the DSM-IV definition of pathological gambling as a model for defining Internet Addiction. The purpose of the study was to determine if Internet use could become addictive and to identify the severity of problems created by Internet overuse. Young’s study also sought to identify criteria for diagnosing Internet Addiction.

Young (1998) justified utilizing pathological gambling as a model since she believed it was the disorder most closely similar to Internet Addiction in terms of etiology. Both pathological gambling and Internet Addiction can be defined as impulse control disorders that do not involve an intoxicant. The study utilized eight of ten items from the DSM-IV screening criteria for pathological gambling. Although, subsequent research (Davis, Flett, & Besser, 2002; Caplan, 2002; Kubey & Lavin, 2001; Morahan-Martin & Schumacher, 2000) and review (Beard & Wolf, 2001; Davis, 2001a; Griffiths, 1998; Holmes, 1997; Shaffer, 2002) has challenged some of Young’s (1998) techniques and findings, her research did provide the basis for later inquiries about PIU.

Recent studies of PIU have turned their focus toward specific populations. Anderson (2001), Hall and Parsons (2001), Kandell (1998), Morahan-Martin and Schumacher, 1997; and Kubey, Lavin, and Barrows (2001) focused their research and theories on the college student population. The present study seeks to add to the body of
research concerning a clinical definition of PIU and its prevalence among and impact upon the college student population. For the purposes of this study, the term Pathological Internet Use will be used interchangeably with terms such as Computer Addiction, Internet Addiction Disorder, Problematic Internet Use, and Cyber Addiction to refer to the same phenomenon. It will be assumed that from a clinical standpoint, Pathological Internet Use is the more appropriate term for the construct in question. This assumption is based on the nine symptoms of Pathological Internet Use meeting the established criteria for an Impulse Control Disorder Not Otherwise Specified (ICDNOS) in the DSM-IV. However, the original author’s terminology will be utilized in the review of the literature for this study.

Statement of the Problem

The problem of the present study is to explore the prevalence and correlates of PIU among the college student population. Understanding this phenomenon is particularly important due to the college student population’s vulnerability to this problematic behavior (Anderson, 2001; Hall & Parsons, 2001; Morahan-Martin & Schumacher, 2000; Scherer, 1997; Kandell, 1998). There is a minimal amount of research into PIU among the general population. The scarcity of PIU research is even more profound when subpopulations such as college students are considered. An additional problem is that previous research has often used samples that are not sufficiently diverse due to the sampling methods employed. The subjects recruited in some studies (Armstrong, Phillips, & Saling, 2000; Brenner, 1997; Young 1996) nearly ensured that pathological behaviors would be found because the participants were self-
identified as having problems with their Internet use or searching for information about PIU on the Internet.

PIU will be conceptualized comprehensively and in terms of its etiology. Many variations of definitions have been offered to describe the construct of PIU, but rarely has the current research been cross-referenced or the assessments validated (Davis et al., 2002). Therefore, the present study seeks to further clarify the construct of PIU by exploring its various dimensions and correlates of the construct with three research tools: a demographic information sheet, the Cognitive-Behavioral Checklist (CBC), and two subscales from the Online Cognitions Scale (OCS). The demographic information sheet collected information such as gender, hours spent online, and class standing. The CBC assessed for presence or absence of the nine symptoms of PIU as described previously. The CBC was designed to be an improvement over previous PIU research tools. The checklist is based on prior research and assessments of PIU (Anderson, 2001; Armstrong et al., 2000; Brenner, 1997; Davis et al. 2002; Greenfield, 2000; Kubey et al., 2001; Morahan-Martin & Schumacher, 2000; Young, 1998). The full version of the OCS consists of 36-items that assess four facets of PIU. The assessment yields scores for Impulsive Problematic Internet Use, Lonely/depressed Problematic Internet Use, Distraction Problematic Internet Use, Social Comfort Problematic Internet Use, and a total Problematic Internet Use score. The OCS has demonstrated high internal consistency as a total measure of PIU with an alpha level of .94 and for each of its subscales: social comfort = 0.87, loneliness/depression = 0.77, diminished impulse control = 0.84, and distraction = 0.81 (Davis et al., 2002). Only the OCS subscales for
loneliness/depression and diminished impulse control will be utilized due to the limitations of the online survey employed. The dimensions of loneliness/depression and diminished impulse control have been supported by prior PIU research (Greenberg, Lewis, & Dodd, 1999; Morahan-Martin & Schumacher, 2000; Orzack & Orzack, 1999; Shapira, 2000; Young & Rogers, 1998).

Significance

The Internet is a relatively new phenomenon; therefore fairly little research has been conducted about its misuse or overuse. Currently, there are an estimated 143 million Americans accessing the Internet on a regular basis (Armas, 2002) and that number continues to grow daily (Anderson, 2001) with about 2 million new Internet users going online for the first time each month (Armas, 2002). About 90% of school age children are current Internet users (Armas, 2002); these children will eventually be the next generation of college student Internet users. Overall, full-time college students make up about 28% of all Internet users (Anderson, 2001). Therefore, if there are problems associated with excessive Internet use, the college student population is a good population to examine for these problems.

College students may be more prone to develop problems associated with excessive Internet use due to a variety of factors including developmental issues (Kandell, 1998) and easy Internet access (Anderson, 2001). Increasingly, college students are required to own computers, complete assignments online, and communicate with professors and fellow students online (Jones, 2002). The Internet connections on college campuses are often high-speed connections. These fast Internet connections
allow users to view content more quickly, utilize interactive applications, and permit the use of more sophisticated online applications. The Internet connections on college campuses are usually free of charge, available on a 24-hour basis, available in student housing, and in a variety of buildings on college campuses. Wireless connections to the Internet via wireless hubs, cell phones, and personal digital assistants are also becoming more common. The need for a lab, a room, or even a place to connect a computer is pushing the growth of the Internet into a wider range of locations and activities. The Internet seems to be evolving much like cellular phones in that they can be connected and used almost anywhere without being tethered to one location by wires. Consequently, Internet use will continue to increase because it will be easier, faster, and more convenient; this trend will likely be most evident on America’s college campuses where the Internet users tend to be computer savvy.

Excessive Internet use in the college student population has been linked to poor academic performance (Griffiths, 1998, 2001; Kubey, Lavin, & Barrows, 2001; Leon & Rotunda, 2000), low self-esteem (Greenberg, Lewis, & Dodd, 1999), depression (Young & Rogers, 1998), loneliness (Morahan-Martin & Schumacher, 2000), and other psychological disorders (Shapira et al., 2000). When all of the aforementioned factors are considered, the case for further research into excessive Internet use among college students and the construct of PIU is quite compelling.

The construct of PIU is also worthy of study from the stand point that the construct fits with in the parameters of an Impulse Control Disorder Not Otherwise Specified as stated in the DSM-IV-TR (Beard & Wolf, 2001; Davis et al., 2002; Young,
1997). Since the cognitions and behaviors that make up the construct of PIU fit within parameters that the mental health field has determined to be worthy clinical attention. Behaviors and thoughts that may cause harm to individuals should be evaluated to better understand their prevalence and possible negative outcomes. This type of research is necessary to identify individuals that may be at-risk for developing PIU and ultimately to create best practices for assessment, treatment, and prevention of PIU.

The results of the present study could prove to be beneficial for mental health practitioners along with professionals and paraprofessionals in higher education. The results should provide a clearer picture of cognitions and behaviors involved in PIU among college students and how extensive the problem is or if a real problem exists. The present study is also designed to reveal potential negative outcomes related to PIU. Furthermore, the current study may suggest a direction for future research and portions of the results could possibly generalize to other educational settings and/or other segments of the general population.

Primary Research Questions

RQ1: What percentage of college students report symptoms that are consistent with the definition of PIU?

RQ2: Is there an interaction between gender and class standing that impacts the number of PIU symptoms reported?

RQ3: Are there group differences in the number of PIU symptoms reported by students based on their class standing?
RQ4: Are there group differences in the number of PIU symptoms reported by students based on their gender?

Definitions Relevant to the Present Study

**Class Standing:** For this study, participants will report their class standing as “Freshman”, “Sophomore”, “Junior”, “Senior”, or “Graduate Student” in the demographic portion of the study.

**College Student:** For the purpose of this study, a college student will be a person enrolled for 12 or more credit hours at a college. This study will focus primarily on “traditional age” college students ranging in age from 18-24.

**Email:** “A system for sending and receiving messages electronically over a computer network, as between personal computers” (Houghton Mifflin Company, 2000).

**Ethnicity:** Participants’ ethnic status will be self-reported on the demographic information sheet. Participants will have the following options to choose from when reporting their ethnic status: Caucasian/White, African American/Black, Latino/Hispanic, Asian, Native American, Multi-Ethnic, or Other.

**Gender:** For this study, gender is considered the same as an individual’s biological determination of human sex. Subjects will designate themselves “Female” or “Male” on the demographic portion of the survey.

**Internet:** “Worldwide network of computer networks that use the TCP/IP network protocols to facilitate data transmission and exchange” (Princeton University, 1997).
Internet: Howe (2001) stated, “(Note: capital "I"). The Internet is the largest internet (with a small "i") in the world. It is a three level hierarchy composed of backbone networks (e.g. ARPAnet, NSFNet, MILNET), mid-level networks, and stub networks. These include commercial (.com or .co), university (.ac or .edu) and other research networks (.org, .net) and military (.mil) networks and span many different physical networks around the world with various protocols, chiefly the Internet Protocol. Until the advent of the World-Wide Web in 1990, the Internet was almost entirely unknown outside universities and corporate research departments and was accessed mostly via command line interfaces such as telnet and FTP. Since then it has grown to become an almost-ubiquitous aspect of modern information systems, becoming highly commercial and a widely accepted medium for all sorts of customer relations such as advertising, brand building, and online sales and services. Its original spirit of cooperation and freedom have, to a great extent, survived this explosive transformation with the result that the vast majority of information available on the Internet is free of charge. While the web (primarily in the form of HTML and HTTP) is the best known aspect of the Internet, there are many other protocols in use, supporting applications such as electronic mail, Usenet, chat, remote login, and file transfer.”

MUD / online game: A Multi-User Domain (MUD) is a class of multi-player interactive game, accessible via the Internet. A MUD is essentially a real-time chat forum with structure; it has multiple locations like an adventure game. The MUD may include features such as combat, traps, puzzles, magic, and an economic system (Howe, 2001).
World Wide Web (WWW): “The complete set of documents residing on all Internet servers that use the HTTP protocol, accessible to users via a simple point-and-click system” (Houghton Mifflin Company, 2000).

Delimitations and Limitations of the Study

Delimitations of the Study

The scope of this study is limited to full-time college students who choose to access this study online during a three-week time frame. Included in the present study are students that attend a large, Midwestern public university.

Another delimitation of the present study is the construct of PIU. PIU is still a relatively new hypothetical construct. There is a great amount of disagreement in the current research as to a precise operational definition of PIU (Davis, 2001a; Griffiths, 1999; Young, 1997). The Cognitive-Behavioral Checklist (CBC) is a research tool that was developed specifically for the present study based on previous research and assessments (Anderson, 2001; Armstrong, Phillips, & Saling, 2000; Brenner, 1997; Davis, Flett, & Besser, 2002; Morahan-Martin & Schumacher, 2000; Young, 1998). However, the CBC has not been validated against other established measures, thus the CBC’s psychometric properties have not yet been determined. The subscales of the Online Cognitions Scale (OCS) utilized in this study are still experimental research tools and have not been normalized across groups, but they been validated against other established measures and researched with college student samples (Davis, et al., 2002). This delimitation adds to the complexity of the data analysis and understanding of the construct of PIU. The scope of this study focuses upon self-reported cognitions,
behaviors, and negative outcomes reported on the CBC and subscales of the OCS at one moment in time. The scores on the CBC and the OCS may change at times in the future because subjects may alter their subjective feelings about their Internet use or may alter how they use the Internet.

Limitations of the Study

Survey research is among the most common research approaches in the social and behavioral sciences (Harris, 1998). Surveys are useful self-report measurements to question subjects about their attitudes, behaviors, and demographic information. Some of the advantages of survey research include convenience, cost effectiveness, and the potential participant anonymity (Cozby, 1993; Harris, 1998). The survey is often thought of as a current “snapshot” of the subject’s present behaviors and attitudes (Cozby, 1993).

Two major considerations in survey research are the sampling techniques and the construction of the survey instruments utilized (Cozby, 1993). The present study is a non-probability sampling of the college student population. Non-probability sampling means that there is no way of knowing the probability of any member of the population being selected for the research. Therefore, generalization of the results from the sample to the whole population may be limited (Cozby, 1993). The instruments used in the present study primarily utilize closed-ended questions for the CBC, the OCS, and the demographic information sheet. Closed-ended questions are a more structured approach than open-ended questions. Consequently, the answers are easier to code and the response options are the same for all participants (Cozby, 1993).
Furthermore, the present study is a correlational research study that attempts to explore the relationships among several variables involved in the construct of PIU. Therefore, there will be no attempt to manipulate or alter the participants or their positions on any variable (Harris, 1998). The purpose of a correlational study is to observe and measure the data related to the research questions. The lack of experimental control in surveys, the independent completion of the surveys by participants, and the overall inability to control the environment in which the surveys are completed serve as additional limitations of this design. Therefore, the lack of experimental conditions or control in correlational design, suggest that it is often not appropriate to draw inferences about how one variable may influence another (Harris, 1998).

A final potential limitation present in the current study is the utilization of an online survey. All data will be collected by the use of a survey published on the World Wide Web (WWW). The main potential disadvantage of utilizing Internet surveys is the possibility of sample bias of Internet surveys may tend to draw a technically savvy, well educated, and male-dominated sample (Coomber, 1997). However, the evolution of the Internet has seen increasing numbers of women online (Nielsen Net Ratings, 2003), thus reducing out a bias towards male participants. Furthermore, since the target population is college students, a population that tends to be technologically proficient and well educated, this bias is not of serious concern. Internet use is essentially the norm for today’s college students, therefore the Internet is a logical place to survey college students.
Additional challenges related to collecting data online are associated with the technology itself (Stewart, 2003). For example, the software used to collect data online may not be compatible with some older computers or certain operating systems. Additionally, precise response rates cannot be accurately determined for online surveys due to the plethora of reasons that potential participants might not complete or ever view the survey. Although it can be assumed that some potential participants declined to participate when they access a survey online, there are several other reasons the recruitment of a potential participant might be unsuccessful including: (a) online server failure when the participant tried to access the survey, (b) the subject contacted does not check his/her university email account, (c) the email address supplied was defective, (d) the email address was set to forward to a second email address that was defective, (e) the message was blocked or filtered as junk mail (spam) by the recipient’s Internet or email service provider, (f) the message was sent to the recipient, but it was delivered in the junk mail box and not read, or (g) The recipient deleted the message before reading it because it was from an unknown sender or unfamiliar subject.

Since all students were not required to utilize the university’s email system, additional participants were solicited via flyers posted in university owned housing. The flyers posted in the student housing included a brief description of the research and tear-off mini flyers with a World Wide Web (www) address to access the online questionnaire. Due to the long web address required to access the online survey (http://iliad.cats.ohiou.edu/html/surveys/C3682509C2E14B078A3E67DC37DA3799.html), it is assumed that the vast majority of the sample was obtained from the students contacted.
via email (these individuals were not required to manually type the web address into their
web browsers). Additionally, the online survey did not provide a means for tracking which
source of recruiting lead the subject to participate in the study.

Despite these limitations online survey research offers several advantages over
more traditional research methods for the researcher and for the overall quality of the
research itself. Stewart (2003) cited the following advantages to collecting data online:
(a) Questionnaires administered over the Internet tend to be cheaper to produce than
traditional paper and phone surveys. (b) Large populations can be reached on the
Internet. (c) Response rates online tend to be faster than traditional methods. (d) Data
processing is simpler and more accurate by enabling the researcher to download data
directly into statistical analysis software reducing human error in data entry and the need
to interpret participants’ handwriting is eliminated. Enhanced data accuracy and data
freshness (speed with which the data can be collected, interpreted, and disseminated)
benefit the entire research community (Shaeffer & Dillman, 1998).
CHAPTER TWO:
REVIEW OF THE LITERATURE

Introduction to the Literature

Everyday new users log onto the Internet for the first time and everyday some users have problems related to their time spent online. Recently, several researchers and clinicians have suggested that some individuals may suffer from Internet Addiction (Anderson, 2001; Brenner, 1997; Davis, Smith, Rodrigue, and Pulvers, 1999; Goldberg, 1997; Young, 1996, 1998) or Pathological Internet Use (Davis, 2001a; Davis, Flett, & Besser, 2002; Holmes, 1997). The idea that individuals could become addicted to the Internet much like a drug or pathological gambling has fueled considerable controversy, debate, and ongoing research.

“Can people become dependent upon the Internet?” and “Should Pathological Internet Use be added to the next revision of the DSM-IV as a clinical disorder?” are just a few of the still unanswered questions related to this phenomenon. However, the research clearly indicates that some individuals are experiencing negative consequences from their time spent online (Anderson, 2001; Armstrong, Phillips, & Saling, 2000; Benner, 1997; Davis, Smith, Rodrigue, & Pulvers, 1999; Young, 1997). Additionally, there are clinicians willing to offer treatment for this very new problem without much research to back up their actions (Hall & Parsons, 2001). Therefore, in order to better define the problem of Pathological Internet Use (PIU) and determine best practices for treatment, additional research is needed.
General Theories of Pathological Internet Use

Goldberg’s Internet Addiction Theory

Much of the early literature on PIU is anecdotal in nature. The roots of the phenomenon known as PIU can be traced back to reports of computer addiction in the 1970’s and 1980’s (Shotton, 1991). Shotton conducted a study to determine the profile of the typical dependent computer user. The study postulated that psychologically dependent computer program users spent more hours using the computer and had difficulty in limiting the amount of time they spent using the computer. Later, Griffiths (1995) would provide an operational definition of technological addictions. Griffiths hypothesized that technological addictions were behavioral and not chemical addictions that involved human and computer interaction. Griffiths (1998) again modified his definition of Internet Addiction to include salience of the activity to the user, changes in mood when engaged in online activities, an increasing tolerance and need for more of the online activity, presence of withdrawal symptoms, and a tendency to relapse after the online activity is discontinued.

The term Internet Addiction Disorder was first introduced by Goldberg (1996), via the online mailing list, “Psychology of the Internet.” Goldberg posted a message suggesting that there was a need for an Internet Addiction support group. It should be noted that Goldberg first proposed the definition of Internet Addiction Disorder as a joke. However, when Goldberg realized that many people took his joke as a serious description of problems they were experiencing, he realized that there was a need to help these individuals. Later, Goldberg recommended that the term Pathological Computer Use was
more appropriate than Internet Addiction Disorder to describe individuals spending excessive amounts of time online to the point that it impacted health. The criteria for this new disorder stated that the use of computers consumes so much time that the individual experiences psychological discomfort and reduced occupational, social, work-related, family-related, financial, mental, or physiological functioning.

Goldberg (1997) further clarified his definition of internet addiction by stating the following: “maladaptive pattern of Internet use, leading to clinically significant impairment or distress as manifested by three or more of the following, occurring at any time in the same 12-month period:

(I) tolerance, as defined by either of the following:
   (A) A need for markedly increased amounts of time on Internet to achieve satisfaction
   (B) markedly diminished effect with continued use of the same amount of time on the Internet

(II) withdrawal, as manifested by either of the following
   (A) the characteristic withdrawal syndrome
      (1) Cessation of (or reduction) in Internet use that has been heavy and prolonged.
      (2) Two (or more) of the following, developing within several days to a month after Criterion I:
         (a) psychomotor agitation
         (b) anxiety
(c) obsessive thinking about what is happening on the internet
(d) fantasies or dreams about the internet
(e) voluntary or involuntary typing movements of the fingers

(3) The symptoms in Criterion 2 cause distress or impairment in social, occupational, or another important area of functioning

B) Use of the Internet or a similar online service is engaged to relieve or avoid withdrawal symptoms

(III) Internet is often accessed more often or for longer periods of time than was intended

(IV) There is a persistent desire or unsuccessful efforts to cut down or control Internet use

(V) A great deal of time is spent in activities related to Internet use (e.g., buying Internet books, trying out new WWW browsers, researching Internet vendors, organizing files of downloaded materials.)

(VI) Important social, occupational, or recreational activities are given up or reduced because of Internet use.

(VII) Internet use is continued despite knowledge of having a persistent or recurrent physical, social, occupational, or psychological problem this is likely to have been caused or exacerbated by Internet use (sleep deprivation, marital difficulties, lateness for early
morning appointments, neglect of occupational duties, or feelings of abandonment in significant others)

*Davis’ Cognitive-Behavioral Model of PIU*

Davis (2000) proposed a cognitive-behavioral model of PIU in an effort to better describe the disorder and address some of the shortcomings of prior models and definitions. Davis noted that the use of the term “addiction” to describe unhealthy Internet use is incorrect. Addiction typically refers to a physiological dependence between a person and some form of stimulus. The DSM-IV does not use the term addiction to describe pathological use of any stimulus. Instead, the DSM-IV uses the terms dependence for chemical misuse and pathological for excessive gambling. Therefore, Davis (2000) concludes that Pathological Internet Use is the most appropriate term to describe problematic Internet use. Young (1996), also made similar suggestions that was more closely related to impulse control disorders than addictions.

Davis (2000) further clarified his model by positing that there are two types of PIU: specific and generalized. Specific PIU refers to people who become dependent on a specific type of utility on the Internet. Specific pathological use includes persons who overuse the Internet to access sexual material, auction services, stock trading, and gambling. It is assumed that this type of pathological use is content specific and would most likely be present in another context even if the Internet were not available to the individual. Specific PIU is connected to one facet of the Internet and is not dependent on other Internet uses. Generalized PIU is a general and multidimensional overuse of the Internet. A person with generalized PIU will often waste time online without a specific
purpose. Some examples of generalized pathological use include excessive use of chat rooms, instant messaging, online games, and e-mail. There is an assumption that the generalized disorder is related to the social aspect of the Internet.

Davis (2000) constructed a model of PIU based on the assumption that PIU is the result of faulty cognitions paired with behaviors that serve to strengthen or preserve the dysfunctional response (see Figure 1). In this model, causes of the PIU are placed on an etiological chain ranging from distal to proximal. Distal causes are near the beginning of the problem. Proximal causes are found toward the end of the chain.

Figure Caption

*Figure 1*. Davis’ (2000) Cognitive-Behavioral Model of Pathological Internet Use (PIU) detailing the etiology of PIU.
Davis (2000) utilized a diathesis-stress framework to explain the distal contributory causes of PIU. Under the diathesis stress framework, dysfunctional behavior is the result of a pre-existing susceptibility (diathesis) and a life experience (stress). The Cognitive-Behavioral Model suggests that psychopathologies such as depression, social anxiety, or substance abuse are necessary as a distal cause for the symptoms of PIU to occur. The psychopathology does not cause the symptoms of PIU by itself, but is a basic component in the etiology of the disorder.

The Cognitive-Behavioral Model assumes that the original psychopathology will leave the individual more susceptible to developing symptoms of PIU. The initial exposure to the Internet or a new online technology is labeled as the stressor in the diathesis-stress model. This initial exposure to the new technology is viewed as a distal cause of the development of the disorder. Davis (2000) noted that the exposure to a new technology would be a more empirically testable event than a person’s first exposure to the Internet. Some examples of the exposure to a new Internet technology include the first time an Internet user utilizes a pornographic web site, an online auction, or a chat room. None of these events are viewed as a cause of pathological use, but each may be contributing factors.

One of the key factors in whether or not a person continues to utilize new technologies is the reinforcement they receive from the experience (Davis, 2000). If the individual has a positive experience with the new technology, she or he is reinforced to continue its use. This positive experience serves to condition the individual to attempt to repeat the use of the new technology in order to receive the same positive reinforcement
he or she experienced previously. This form of operant conditioning continues until the person searches for new online applications to achieve similar positive physiological reinforcement. Based on this model, any stimulus that becomes associated with the principal conditioned stimulus may become a secondary reinforcer. Therefore, events and objects associated with being online such as the sound of the modem connecting, the feel of typing on a keyboard, or the sight of a computer may become secondary reinforcers and lead to the response that has been conditioned. These types of secondary reinforcers can encourage the development of symptoms of PIU and help to maintain the related symptoms.

According to Davis (2000), one of the most important facets of the cognitive-behavioral model of PIU is the occurrence of maladaptive cognitions. These maladaptive cognitions are proximal causes of the disorder and are sufficient to cause symptoms of PIU. Davis (2000) divides these maladaptive thoughts into two categories: thoughts about self and thoughts about the world. Maladaptive thoughts about self are characterized by a ruminative cognitive style. Persons with a ruminative cognitive style are constantly thinking about online activities rather than on other life issues. It is assumed that persons with a ruminative cognitive style will experience PIU for longer periods of time and with more severe symptoms than individuals who do not have this cognitive style. Some other maladaptive cognitions include self-doubt, low self-efficacy, and negative self-assessments. These individuals likely have a negative self-concept and utilize the Internet to receive positive feedback in a non-threatening environment.
Persons who are suffering from cognitive distortions about the world will generalize specific events on the Internet to more global trends in the real world. Davis (2000) gives the following examples of global distortions: “The Internet is the only place I am respected,” “Nobody loves me offline,” “The Internet is my only friend,” or “People treat me badly offline.” “This all-or-nothing thinking is considered a maladaptive cognitive distortion that exacerbates the individual’s Internet dependence” (Davis, 2000). Either of the previously mentioned cognitive distortions is activated automatically whenever a stimulus associated with being online is encountered.

In terms of symptoms, Davis’ (2000) Cognitive-Behavioral Model of PIU is generally in agreement with Young (1996). However, Davis (2000) places a greater emphasis on the cognitions involved in the disorder than earlier research. The most prominent symptoms of the disorder are obsessive thoughts about the Internet, reduced impulse control, lack of ability to stop using the Internet, and a belief that the Internet is the individual’s only social support. These individuals will often believe that the Internet is the only place where they can have positive feelings about themselves and the outside world.

Other symptoms of the disorder include thoughts about the Internet while offline, looking forward to future time online, and spending excessive amounts of money on Internet related expenses. The amount of time spent in previously enjoyable and/or essential activities is reduced in favor of additional time online (Young, 1996). Significant relationships also suffer as a result of the pathological user becoming more isolated due to their time spent online. As users become more isolated, they will tend to
develop guilty feelings about their spent time online. Lies are often used to conceal the extent of the users time online. Pathological users often realize what they are doing is socially unacceptable, but do not know how to control their online behavior. Ultimately, pathological users feel a diminished sense of self worth and become entangled in a cycle that results in broadening the symptoms of PIU. These various problems can exist within specific or generalized PIU.

*Suler’s Eight Factors of PIU*

Suler (1999) hypothesized that differentiating between healthy and PIU could be accomplished by examining 8 factors. “One’s passion for the Internet can be healthy, pathologically addictive, or somewhere in between” (Suler, 1999). The eight factors to determine the nature of a person’s relationship with the Internet include:

I) The number and type of needs being addressed by the online activity.

Internet users may attempt to meet physical, intrapersonal, interpersonal, or spiritual needs. The more needs the user attempts to address via the Internet, the more important the Internet becomes for that person.

II) The underlying degree of deprivation of unmet needs. The more the user’s underlying needs have been stifled or denied, the more the user will look for ways to meet those needs. The Internet is often a place where these needs are more easily met than the real world.

III) The type of Internet activity. The more features that a particular activity involves, the more needs the user may attempt to meet via the Internet.

“Different types of Internet activities can vary greatly in how they
influence different needs. Environments that combine a variety of features may address a wider spectrum of needs and, consequently, may be more captivating” (Suler, 1999).

IV) The effect of the Internet on user’s real-life ability to function.
Functioning may be impacted in the areas of physical health, work performance, and significant relationships. The number of these areas that are impaired by Internet use and the profundity of the disruption will expose the seriousness of the pathology.

V) Subjective feelings of distress. Warning signs of Pathological Internet Use often include feelings of depression, frustration, anger, guilt, and alienation related to the user’s Internet activities.

VI) Conscious awareness of needs. “The more a person understands his motivations, the more they lose their power as the unconscious thing leading to compulsive Internet use” (Suler, 1999). A person acting out repressed needs through Internet activities is merely conducting a cathartic activity that will have to be repeated endlessly unless the real unmet needs are addressed. “Working through underlying needs means that one resolves the conflicts or deprivations related to the Internet activities, in part, by consciously understanding what those needs entail” (Suler, 1999).

VII) Experience and the phase of the involvement. As Internet users gain experience, they will often realize that Internet activities are not fulfilling
their real world needs or the novelty of the Internet wears off. Experience often helps users avoid activities that require excessive involvement.

VIII) The balance and integration of in-person and cyberspace living. Healthy Internet use involves an integration of online activities and relationships with real world relationships and activities. “Pathological Internet Use often results in an online life that is completely isolated from one’s in-person life and even guarded against perceived intrusions from the real world” (Suler, 1999).

_Grohol’s Three Stage Model of PIU_

Grohol (1999) suggested that PIU follows a rather simple three-stage progression in both new and existing Internet users (see Figure 2). In stage one, the user is “enchanted” with the new technology or new application on the Internet. This enchantment or obsession with new activity results in an overuse of the technology until the subject moves into stage two. In stage two, the online user becomes disillusioned or even bored with the new technology on the Internet and begins to avoid using the technology due to the overuse. This avoidance will last until the subject moves into stage three. In stage three, the user finds a balance and begins to use the new technology at a “normal” level that does not interfere with the subject’s other areas of functioning.
Grohol’s (1999) Model of PIU makes several assumptions. First, the model assumes that some people simply get “stuck” in the first stage when they encounter a new technology on the Internet. These individuals that get stuck in the first stage may need assistance in advancing to the second and third stages. It is assumed that experienced
Internet users will have an easier time moving through the three stages than less experienced or new Internet users. Grohol (1999) hypothesized that “all online activity is phasic to some degree, all people will eventually get to Stage III on their own. Most adults online will also learn how to responsibly integrate the Internet into their lives.” However, some individuals will take longer than others to make this progression. Finally, Grohol, concluded that existing Internet users may re-enter this model as they encounter new activities on the Internet.

Unfortunately, Grohol’s model does not address many important factors that may contribute to PIU such as pre-existing or newly developed mental health issues (Shapira, et al., 2000). The model suggests that PIU only occurs when an Internet user encounters a new online activity, but does not allow for the possibility that an activity that is not necessarily new to the user could be used in a pathological manner at later time. It would seem possible that a new stressor (example: end of a significant relationship) could create a situation in which an activity that was previously neutral online activity (example: instant messaging) could later be used in a pathological manner as suggested by Davis’s (2000) cognitive-behavioral model of PIU. Furthermore, this model does not address the reality that some Internet users seem to be unable to reduce or control their use of certain types of activities online (Jones & Minatrea, 2001).

Hall & Parsons’ Internet Behavior Dependency

One of the latest attempts to define PIU, Hall and Parsons (2001), directly attacked the definitions of their predecessors such as Goldberg (1996), Griffiths (1998), Kandell (1998), and Young (1996). Hall and Parsons (2001) noted that previous
attempts at defining Internet related disorders were based on DSM-IV criteria for either pathological gambling or substance dependence, but did not address other critical issues related to the disorder. The first critical issue often ignored by previous definitions was the failure to address co-morbid mental health issues (Shapira, Goldsmith, Keck, Khosa, & McElroy, 2000). Second, many of the studies were conducted online, which is probably not appropriate for separating normal behavior from unhealthy behavior (Griffiths, 1998). Third, there has often been no attempt to discriminate between time that is spent online for normal work and online time that is pathological in nature. Finally, previous definitions begin with an assumption of pathology and are deficient in theoretical basis (Grohol, 1999).

Hall and Parsons (2001) offered Internet Behavior Dependence (IBD) as an improved definition of Internet-related disorders. The definition offered was consistent with an addictions point of reference and assumed that persons addicted to the Internet would demonstrate several “dependent” conditions that were previously reported by Rasmussen (2000). The expected conditions included: failure to fulfill major role requirements at home, work, or academically; more time online with less pleasure; agitation when not online; failed attempts to reduce, control, or eliminate time online; and continued use despite knowledge of physical, mental, and social difficulties related to extreme use (Rasmussen, 2000). Hall and Parsons (2001) state that they do not utilize a model of pathology for Internet related problems. First, it is assumed that excessive Internet use is a relatively harmless problem in living that is an attempt to compensate for lack of satisfaction in other areas of functioning. Second, average individuals can correct
the behaviors associated with excessive Internet use. Finally, Hall and Parsons (2001) postulate that IBD is created by a maladaptive coping style that can be treated with cognitive-behavioral treatments. The definition of IBD attempts to provide a person-centered and holistic alternative to the previous definitions of PIU.

Hall and Parsons (2001) do an adequate job of assessing weaknesses of the previous research and definitions, but fail to provide a viable alternative operational definition of PIU that is empirically testable or superior to those which are currently available. In fact, Hall and Parsons (2001) seem to contradict themselves when they suggest that clinicians should be aware of and “use with caution” assessments such as Brenner’s (1997) Internet-Related Addictive Behavior Inventory (IRABI) and the C—IRABI-II (Chou & Hsiao, 2000). However, problems exist with most, if not all of the current assessment tools for PIU (Davis, 2001b).

Challenges to PIU Theories and Research

Determining what level or type of Internet use is pathological is one of the greatest challenges and controversies related to PIU. Grohol (1997) and Holmes (1997) suggested that one of the major problems in diagnosing and defining PIU is the limited research into what is normal Internet use. Armstrong, Phillips, and Saling (2000) noted that little is known about the similarities and dissimilarities between PIU and other types of addictions or compulsions. Grohol (1997) suggested that mental health professionals often attempt to, “look for and diagnose that which does not fit within their cognitive paradigm of what is ‘normal.’” Grohol (1997) also questioned if it is really possible to
define Internet overuse or abuse since most of the data on normal Internet use is preliminary in nature.

One caveat of the research that supports the notion that there still is not an ideal way to define normal Internet use is the wide range of average time spent online reported by various studies. For example: the average subjects in Holmes (1997) reported an average of 19 hours per week spent online, Benner (1997) reported that dependent users spent an average of 11 hours per week, and Morahan-Martin and Schumacher (1997) stated that pathological users spent an average of 8.5 hours online per week. Each of these authors used varying standards to determine what type of level of Internet use was unhealthy. One constant among all research into PIU has been the finding that pathological behavior and consequences are positively correlated with increased hours online regardless of how the study operationally defined the construct of PIU (Anderson, 2001; Brenner, 1997; Holmes, 1997; Morahan-Martin & Schumacher, 1997; Young, 1998). Holmes (1997) further suggested that it is relatively simple to define when Internet use is pathological: the use of the Internet interferes with other parts of one’s life.

Due to the wide range of time spent online in various studies, Grohol (1997) concluded that time spent online alone was not adequate to make a determination of what level of internet use is normal and what is harmful. “We cannot define overuse of the Internet based solely upon time spent online, since estimates still vary widely as to what is considered normal or appropriate (from 5 hours to 20 hours per week). We cannot examine criteria used to help diagnose other addictive disorders, since they appear to be relatively commonplace even amongst casual Internet users” (Grohol, 1997). Holmes
(1997) supported this position by stating that what a person does online is probably as important as how much time that person spends online. Davis (2001b) noted that pathological use is not solely in the user’s behaviors, but also in their cognitions. Essentially, pathological users not only behave differently, but they also think differently than a healthy Internet user and in many cases experience negative outcomes due to their Internet use (Griffiths, 2001; Morahan-Martin & Schumacher, 1997; Kubey, Lavin, & Barrows, 2001).

An additional challenge in researching this issue with the college student population is what may be defined as normal or average Internet use may vary greatly based on academic major (Anderson, 2001). Anderson found that students in science and technology related majors often reported spending significantly more time online and more symptoms of PIU. Davis et al. (1999) also suggested that the size (large versus small) and type (public versus private) institution might be an additional variable to consider in exploring college student Internet use. Grohol (1997) finally concluded that the current research is preliminary, cloudy, contradictory, and not conclusive. Consequently, Grohol concluded that the current research does not support the existence of an Internet Addiction disorder. However, the weaknesses of the current literature have encouraged rather than discouraged a greater quantity and in some cases, quality research into the question of Internet Addiction.

Davis (2001b) noted previous assessments of PIU were contaminated or methodologically unsound for various reasons. Most of the assessments let the subject know exactly what aspect of their behavior is being measured simply by reading their
names. Some examples of these obvious assessments include the Internet Addiction Test (Young, 1999), Internet-Related Addiction Behavior Inventory (Brenner, 1997), and Internet Related Problem Scale (Armstrong, Phillips, & Saling, 2000). Davis (2001b) suggested that assessments of PIU should predict rather than describe Internet-related behavior. The general research suggests that there are a significant number of persons experiencing problems that fit the various definitions of PIU. Most research of PIU is finding small but significant numbers of people who are reporting problems worthy of further research and in some cases clinical attention. Consistently, the literature that has not supported attempts to refute the existence of PIU, is almost exclusively a critical review or critique. Real scientific research has not been able to completely explain why some individuals have been reporting similar problems in increasing numbers of studies since the mid 1990’s.

**Theories of Pathological Internet Use Related to College Students**

*Kandell’s Theory of College Student Internet Use*

Kandell (1998) suggested that college students are particularly vulnerable to Internet Addiction for several reasons. Reasons for college students being susceptible to PIU include: psychological and developmental characteristics of young adults, easy access to the Internet, and the expectation of Internet use. Kandell (1998) suggested that PIU in the college student population is similar to compulsive exercise. Exercise is generally healthy and for most people necessary to maintain fitness. Most individuals can exercise without serious consequences, however some individuals become dependent on the positive feelings that exercise arouses. The positive feelings fuel the individual to
exercise to a point that actually diminishes the individual’s health. In a similar fashion, the Internet has become a required learning and communication tool for most, if not all college students. Kandell’s supposition that college students are an at-risk population for PIU has been consistently supported in the literature (Anderson, 2001; Armstrong, Phillips, & Saling, 2000; Hall & Parsons, 2001; Morhan-Martin & Schumacher, 1997).

Kandell (1998) stated that the most critical factors that add to the vulnerability to PIU of college students are psychological and developmentmental issues which persons of traditional college age typically encounter. “Traditional-age college students (and non-students of this age as well) face two important tasks: (a) development of a firm sense of identity and (b) development of meaningful, intimate relationships, both emotionally and physically, with romantic partners” (Erikson, 1963). Successful completion of these developmental tasks is not automatic and some individuals do not successfully complete these developmental tasks. “The demands of these transitions, especially for students, who must balance academic requirements, frequently produce a good deal of stress, depression, interpersonal problems, and other psychological symptoms” (Kandell, 1998).

The first factor contributing to the vulnerability of college students is related to the stage of life developmental issues. For example, most addictive behaviors such as drinking, drug abuse, gambling, sex, exercise, and eating disorders start or increase during this stage of life (Kandell, 1998). Kandell (1998) hypothesized that addictive behaviors serve two purposes for traditional college students. First, the addictive behavior acts as a coping tool for students who are not effectively handling the
developmental challenges required by this stage of life. Next, these addictive behaviors then act as a pathological mechanism to resolve these developmental challenges. The Internet may serve as a place where students attempt to resolve unmet needs.

The second factor contributing to the vulnerability of college students is the free and relatively easy access to the Internet (Kandell, 1998). Many colleges provide free and unlimited Internet use to their students. Hourly usage fees that may have limited excessive use have been replaced by set fees for unlimited access; thus eliminating financial reasons for limiting time online. Most colleges provide students access to the Internet in academic buildings and increasing numbers of colleges are providing high-speed access in student housing and at various locations via wireless Internet access points. In comparison to the general population, 86% of college students have gone online, versus 59% of the general population (Jones, 2002).

The third factor that contributes to the vulnerability of college students to PIU is the encouragement and often requirement of Internet use in college classes (Kandell, 1998). The Internet is often a natural extension of the classroom, however it is very easy for students to move from working on an academic assignment to surfing the Internet, checking e-mail, or talking in a chat room. For most students this momentary diversion will not have long-term consequences. In contrast, the student who cannot limit his or her time in this diversion will likely experience problems in one or more areas of development and functioning.
Chickering’s College Student Development Theory and PIU

Previous research has not directly addressed the question of which students might be more at risk for developing PIU based upon class standing. However, the present study will explore this issue and will make use of Arthur Chickering’s Psychosocial Theory of Student Development (Chickering & Reisser, 1993) to guide the hypothesis testing. Chickering’s theory is actually an extension of Erik Erikson’s (1963) theory of psychosocial development with emphasis being placed developmental issues faced by traditionally aged college students. The theory is divided into seven vectors that students are believed to progress through during their time in college.

The seven vectors of college student development according to Chickering and Reisser (1993) are: (a) developing competence, (b) managing emotions, (c) moving through autonomy toward interdependence, (d) developing mature interpersonal relationships, (e) establishing identity, (f) developing purpose, and (g) developing integrity. Developing Competence involves intellectual competence, physical and manual skills, interpersonal skills, and an overall feeling of competence. Managing Emotions pertains to growth in awareness of emotions, controlling emotions appropriately, and finding a balance between self-expression and self-control. Moving Through Autonomy Toward Interdependence involves progression from a need to continual reassurance to a level of strong self-reliance to the realization that a person must be able to rely on self and others. Developing Mature Relationships is related to increased tolerance and acceptance of differences among individuals, an increased capacity for intimate relationships, and more empathetic and reciprocal relationships. Establishing Identity pertains to issues such as
comfort with one's appearance, comfort with gender and sexual orientation, clarification of self-concepts, and self-acceptance. Developing Purpose relates to students’ development vocational plans, personal interests, and interpersonal and family commitments. Developing Integrity relates to the evolution of personal values and a sense of congruence.

It is theorized that students progress through the seven vectors in a chronological order (Chickering & Reisser, 1993). Students that accomplish the task or challenge of each stage will progress to the next vector. Students that do not resolve the task at a particular vector will remain at that level until they resolve the developmental task at that level. Chickering and Reisser (1993) suggest that students move through the first three vectors (Developing Competence, Managing Emotions, and Moving Through Autonomy Toward Interdependence) simultaneously during their freshman and sophomore years in college. Since there are so many developmental challenges occurring simultaneously at during the freshman year, it may be reasonable to expect that freshmen students may also be more prone to more problematic or even pathological behavior in relation to their Internet use. This association has been made by Kandell (1998), but has not been tested to determine if certain groups of students might be more at risk for development of PIU. Therefore, the present study will test the hypothesis that freshmen will report significantly more symptoms of PIU than upperclassmen.
General Research of Pathological Internet Use

Young’s Internet Addiction Research

Young (1996, 1998) was one of the first researchers to explore the existence and prevalence of Internet addiction. Furthermore, Young began much of the debate and controversy over the question of whether Internet Addiction should be classified as a new clinical disorder.

Young (1996) postulated that an Internet user could be classified as dependent if he or she met four or more of the following criteria over a 12-month period: (a) feeling preoccupied with the Internet (think about while offline), (b) a need to use the Internet with increasing amounts of time in order to achieve satisfaction, (c) an inability to control Internet use, (d) feelings of restless or irritability when attempting to cut down or stop Internet use, (e) using the Internet as a way of escaping from problems or of relieving a poor mood (feelings of helplessness, guilt, anxiety, or depression), (f) lying to family or friends to conceal the extent of involvement with the Internet, (g) has jeopardized or risked the loss of a significant relationship, job, educational, or career opportunity because of the Internet, (h) continuing to return to the Internet even after spending an excessive amount of money on online fees, (i) withdrawal symptoms are experienced when offline (increased depression, anxiety), and (j) staying online longer than originally intended.

Young (1996, 1998) constructed a study that involved 496 subjects using the DSM-IV definition of pathological gambling as a model for defining Internet Addiction. The purpose of the study was to determine if Internet use could become addictive and to
identify the severity of problems created by Internet overuse. Young’s (1996, 1998) study also sought to identify criteria for diagnosing PIU.

Young (1998) justified utilizing pathological gambling as a model since she believed it was the disorder most closely similar to Internet Addiction in terms of etiology. Both pathological gambling and Internet Addiction can be defined as impulse control disorders that do not involve an intoxicant. The 1998 study utilized eight of ten items from the DSM-IV screening criteria for pathological gambling. Two items were eliminated since they did not apply to Internet misuse. Subjects who responded positively to five or more of the eight items were classified as dependent; subjects with less than five items endorsed were classified as non-dependent. This is in contrast to the original 1996 study that used the positive endorsement of four or more screening questions as the criteria for addiction. Additionally, Young (1998) used the term Internet to cover all types of online activity.

The participants in Young’s (1996) study were volunteers recruited through five sources: (1) a national and international newspaper advertisement, (2) flyers posted at local college campuses, (3) postings on listservs that focused on Internet Addiction, (4) persons who performed searches on the keywords Internet or addiction or popular search engines, and (5) volunteers who agreed to participate in the study completed an exploratory survey via telephone or e-mail. The diagnostic questionnaire included several questions pertaining to the subject’s Internet use, problems experienced as a result of their Internet use, and demographic use. Over a three-month period the study netted 605 total responses and 596 valid responses. Analysis of the diagnostic questionnaire
resulted in 396 participants being classified as dependent and 100 participants classified as non-dependent. The average age of the dependent group was 29 for males and 43 for females. The dependent group included 157 males and 239 females. The non-dependent group included 64 males and 36 females. The average age for the non-dependent group was 25 for males and 28 for females.

Aside from demographics, Young (1998) found some significant differences between the dependent and non-dependent groups. The two groups varied in terms of length of time having used the Internet, hours per week spent online for non-essential activities, and the types of Internet applications utilized. Only 17% of the dependent group had used the Internet over one year whereas 71% of the non-dependent group had used the Internet for over one year. The dependent group spent an average of 38.5 hours per week online involved in non-essential activities such as personal e-mail, reading articles, games, and chat rooms. Non-essential activities were defined as any activity that was not for employment or academic purposes. The non-dependent group spent an average of 4.9 hours per week online in non-essential activities. Young (1998) compared this time differential to the development of tolerance in alcoholics who increase their consumption of alcohol to achieve their initial high from drinking. Dependent users also reported that their time spent online increased as they became more familiar with the Internet. A lack of desire to manage non-essential time online and the centralization of Internet activity were other attitudes that distinguished the dependent group from the non-dependent group.
The dependent group and the non-dependent group can also be contrasted in terms of the types of Internet applications they utilize while online. Non-dependent users viewed the Internet as a means of gathering information for personal and business communication. The applications used most by non-dependents included the World Wide Web and e-mail. Dependent users preferred to use the Internet for its two-way communication capabilities. The most common applications for dependent users were: chat rooms, multiple user dungeons (MUDs), and e-mail. The dependent group seemed to prefer domains that allowed for more interactive communication with other users. The dependent group often reported preferring their online relationships to the ones in their real lives. This preference for online relationships seemed to be related to real life problems for persons in the dependent group.

The most compelling evidence for the existence of Internet Addiction presented by Young (1998) lies in the negative consequences reported by dependent users. Both non-dependent and dependent users reported an experience of time distortion while online. However, non-dependent users do not report that this time distortion phenomenon was severe enough to interfere with real life responsibilities such as work, school, or family. Dependents reported that they had experienced significant problems in the areas of personal relationships, personal finance, work, school, and physical health as a result of their excessive Internet use.

Most pertinent to the present study is the finding of difficulties reported by students as a result of Internet misuse (Young, 1998). The types of misuse most commonly reported by students included surfing unnecessary web sites, spending
excessive time in chat rooms, e-mailing, and playing interactive games. The student population reported trouble completing homework assignments, not spending enough time studying, and not getting sufficient sleep in order to be attentive or even wake up for classes. The consequences of Internet Addiction include: poor grades, academic probation, and in the most extreme cases expulsion from college. Students also reported many of the same social consequences of other dependent users.

Dependents reported that many of their significant relationships suffered as a result of their excessive time online. The marriages, dating relationships, friendships, and parent-child relationships of dependent users were given a reduced amount of time as online time increased in importance and frequency. Dependents would often attempt to deny, lie about or justify the amount of time they spent online. The dependent users would often attempt to hide the amount of time they spent online from significant others. Marriages and dating relationships were most often disrupted when the dependent user formed new online relationships while simultaneously withdrawing from their real life relationships. Frequently, the dependent user viewed these online relationships and encounters as harmless and “not real” while doing real damage to real life relationships by neglect.

Another area that dependents reported neglecting was their financial obligations. Some of the dependents reported logging large bills for Internet access. Young (1998) noted that negative financial consequences might be less of an issue now that most Internet service providers charge a flat fee for Internet access. However, Young (1998) also noted that without financial consequences for excessive use, some users might be
encouraged to perpetuate their addictive behaviors. This finding is especially significant in the current college environment where Internet access is often free, thereby eliminating any financial consequence for prolonged use.

In terms of personal health, dependents reported the following problems: disrupted sleep, excessive fatigue, abuse of stimulants to stay awake, and a lack of proper exercise. The physical problems also translated into problems functioning in academic and occupational settings. Excessive use also placed dependents at an increased risk for the development of carpal tunnel syndrome, back strain, and eyestrain.

In spite of the negative consequences suffered, most (54%) dependent users reported no desire to reduce the amount of time spent online. The remaining (46%) dependent users reported making numerous, unsuccessful attempts to reduce their time spent online in order to avoid negative consequences. Most who attempted to control their time online utilized self-imposed time limits that would eventually be violated. When time limits failed, some dependents resorted to canceling their Internet service, disabling their modems, or removing the computer from the home to prevent themselves from using the Internet. Most of these efforts would likely not be realistic options for today’s college students. Many of the dependents reported feeling “cravings” or a preoccupation with spending time online. The dependents believed that accessing the Internet to get their “fix” was the only way to relieve their cravings.

Many subsequent studies and reviews (Beard & Wolf, 2001; Davis, 2001a; Davis, et al., 1999; Davis, Flett, & Besser, 2002; Griffiths, 1998; Hall & Parsons, 2001; Kubey, Lavin, & Barrows, 2001) have pointed out several weaknesses in Young’s (1996, 1998)
groundbreaking study. At the time of the study there were 56 million Internet users in the United States (Intelliquest, 1997), that number continues to increase and include more diverse segments of the population (Kandell, 1998). Thus, Internet access is now far more common among all segments of the population including college students (Jones, 2002). Young (1998) noted that the dependent group and non-dependent group were not matched in terms of demographics. Young cautioned that the results of her study should be generalized with prudence and that further research was needed with a larger sample and a balanced control group. Another confound of the study was that all study participants were self-selected, that leaves open the question of motivation for participation open to debate. Despite these limitations, Young’s study is high in heuristic value in that it has provided the groundwork for several additional studies and debates.

Brenner’s Internet Addiction Research

Brenner (1997) also conducted one of the early studies on Internet Addiction. The study utilized an online survey known as the “Internet-Related Addictive Behavior Inventory” (IRABI). The IRABI consisted of 32 true-false questions based on DSM-IV criteria for substance abuse. Many of the questions focused on role functioning of online activity and the negative consequences from excessive time online. Brenner (1997) also included four questions to control for random responses. The survey was accessible directly at a web address given by the author. Additionally, this survey was accessible via links in a United Press article about the survey and on several major Internet search engines when Internet surfers typed in the phrase “Internet Addiction.”
Brenner (1997) achieved a good level of internal consistency (alpha = 0.87) with the IRABI. All 32 items on the scale correlated moderately with the total score. Correlations ranged from 0.22 to 0.55 with an average correlation of 0.44 (Brenner, 1997). Brenner concluded that with levels of internal consistency and correlation of the survey items with total score, that his survey was indeed measuring the construct of Internet Addiction.

The results of Brenner (1997) indicated that the average Internet survey respondent was male and 34 years of age. A total of 1,885 persons from 25 different countries accessed the survey; 654 individuals completed the entire survey. The average amount of time spent online per week was 19 hours (including business Internet use). Men and women did not differ significantly in terms of time spent online or in Internet related problems experienced. However, younger users did report significantly more problematic consequences than did older Internet users.

Eighty percent of Brenner’s participants endorsed at least five signs of impaired functioning as a result of excessive time online. Brenner (1997) also discovered a sub-group within his sample that experienced significantly more negative consequences from their Internet use than the average Internet user. The analysis of the results suggested preliminary evidence of tolerance, withdrawal, and craving. Finally, Brenner (1997) noted that the results of the study should be interpreted with caution due to the elective nature of the survey instrument. Brenner’s study also shared a weakness with Young (1996), in that the survey samples in both cases were self-selected and not chosen with a formal sampling method.
Armstrong, Phillips, and Saling’s Internet Addiction Research

Armstrong, Phillips, and Saling (2000) conducted a study utilizing an Internet Related Problem Scale that was based on a modification of Brenner’s (1997) Internet-Related Addictive Behavior Inventory. This study was based on two premises. First, many of the harmful social and life consequences with the established chemical addictions are also related to extreme Internet use (Young, 1997). Thus, the negative consequences of extreme Internet use are a practical way to examine Internet Addiction. Second, most research of Internet Addiction has reported a general loss of control by dependent users over the amount of time they spend in Internet activities (Shotton, 1991; Young, 1997). Armstrong et al. (2000) also sought to test the construct validity of the Internet Related Problem Scale due to the lack of a reliable or validated measure of Internet Addiction.

Armstrong et al. (2000) included 29 male and 23 female subjects. Most of the subjects were between the ages of 25 and 30. Subjects were required to use at least one form of Internet service. The participants were recruited via an email request and by contacting the Internet Addiction Support Group. Participants completed the Internet Use Survey, which consisted of four parts. One section of the survey included demographic information such as age, sex, nationality, education level, occupation, and marital status. A section on Internet use included multiple-choice questions to amass information regarding time spent online per week, time spent on individual types of Internet services, and the location where the subject usually connected to the Internet.
The Armstrong et al. (2000) survey instructed participants to focus upon time online that was personal and voluntary rather than for business. The section known as the “Internet Related Problem Scale” consisted of 20 Likert scale questions ranging from 1 to 10 (1 = Not true at all to 10 = Extremely true). The questions adapted items from the DSM-IV diagnosis of an impulse control disorder. The DSM-IV related items were concerned with evaluating tolerance, craving, withdrawal, and negative life consequences. The questions also covered issues related to the consequences of excessive Internet use. The final section of the survey consisted of three personality scales. The MMPI-2 Addiction Potential Scale was utilized to address the validity of the Internet Related Problem Scale. The Addiction Potential Scale has already demonstrated a good level of test-retest reliability, internal consistency, and high level of construct validity (Cohen, Swerdlik, & Phillips, 1996). The other two scales in the survey, the Sensation Seeking Scale and Coopersmith Self-Esteem Inventory, were employed to examine personality traits that may predispose individuals to addictive behaviors.

Armstrong et al. (2000) utilized Cronbach’s alpha to test the internal reliability of the Internet Related Problem Scale’s items. Nine items that focused on variables of tolerance, withdrawal, craving, loss of control, time spent on online activities, reduction of time spent on other activities in order to spend more time online, negative consequences of excessive Internet use, escapism due to other problems, and introversion. Each of the previous items, excluding “escapism due to other problems” and “introversion” is currently utilized to diagnose substance abuse. The Cronbach’s Alpha coefficient was 0.88, which demonstrates a moderate level of internal consistency.
The results also suggest that the survey’s items were homogenous and related to the construct of Internet Addiction (Armstrong, et al., 2000).

Armstrong et al. (2000) utilized the Pearson correlation coefficient to analyze the relationship between the Internet Related Problem Scale and objective measures of Internet use (number of hours spent online per week). A highly significant correlation was found between the Internet Related Problem Scale and the total number of hours spent online ($r (48) = 0.759, p<0.01$). The Internet Related Problem Scale also significantly correlated with the MMPI-2 Addiction Potential Scale ($r [48] = 0.297, p<0.05$), which is already accepted as a measure of potential for alcohol and substance abuse. Armstrong et al. (2000) postulated that these correlations support the construct validity of the Internet Related Problem Scale and consequently provided evidence for the existence of Internet Addiction. Overall, Armstrong et al. (2000) provided an improved assessment of PIU, but shared a questionable sampling method just as did its predecessors such as Brenner (1997) and Young (1996).

*Research of Pathological Internet Use Related to College Students*

*Anderson’s Internet Addiction Research*

Anderson (2001) conducted one of the most recent and the largest studies of PIU among college students. The present study is closely modeled after Anderson (2001) and intended to extend its results. The study included over 1,300 students from eight universities. Anderson (2001) attempted to answer four research questions: (a) How much time do students spend on the Internet? (b) Among various academic majors, are there differences in the amount of time spent online? (c) Does excessive Internet use
result in academic, social, or lifestyle difficulties? (d) Are students in certain academic majors more prone to be dependent on the Internet? Internet use was defined as spending time in the following activities: e-mail, browsing the World Wide Web (WWW), Usenet activity, File Transfer Protocol (FTP), multi-user dungeons (MUDs), and interactive games. Anderson (2001) hoped to extend the research of Scherer (1997) and to provide college health and mental health professionals with reliable and practical prevalence data. The study also sought to explore differences among academic majors in terms of Internet use and aid in the development of prevention and treatment protocols.

Anderson (2001) noted that his study was preliminary in nature and the construct of Internet Addiction is still under debate. The instrument utilized was non-standardized and no pilot study was conducted. Due to the limited number of studies related to Internet Addiction and a dearth of alternative instruments, no attempts were made to validate the instrument. The survey consisted of a 69-item paper-and-pencil questionnaire. The initial survey items gathered demographic data. All other questions on the questionnaire concerned the students’ voluntary time spent participating in online activities. The subjects were instructed not to include any time that they were required to be online when considering the survey items. Additionally, the subjects reported how much time they spent in several online activities and the purpose of these activities. Next, subjects answered a series of true-false questions to assess the impact of their online activities. Finally, the subjects were asked to use a 5-point Likert scale to rate the degree to which Internet use had impacted their current real-life relationships including: academics, participation in extracurricular activities, sleep patterns, and meeting new
people. The surveys were distributed in a variety of classes and returned via mail to the head researcher.

One of the important caveats of Anderson (2001) is that no first year students were included in the study. The study was conducted during the fall semester and it was assumed that first year students might not yet be familiar with the campus computing system. The author also hoped that a more accurate sample of Internet use could be determined by excluding first year students. The sample included students at seven different colleges in the United States and one in Europe. The colleges included a mid-sized private, technical/engineering school, two small private liberal arts colleges, two large public state universities, a small private technical college, and a small non-traditional public college located in the United States. The sample also included a small technical college in Ireland.

Anderson (2001) collected data over a three-week period in the middle of the fall semester. The survey collection produced 1,302 usable surveys with 649 male and 647 female students participating. Of the original 1,302 usable surveys, 224 participants indicated that they do not use the Internet. Participants who indicated no Internet use were excluded from the data analysis. The questionnaires excluded any identifying information and consent forms were collected separately.

Anderson (2001) found that the overall average for amount of time spent online in voluntary activities by college students was 99 minutes per day. It was noted that browsing the World Wide Web (WWW) and email were the most time consuming activities at 39 and 35 minutes per day respectively. The finding that web browsing and
emailing ranked first and second in terms of use, should not be a surprise since both activities are essentially required activities for today’s college students (Jones, 2002). The average number of minutes online per day was also reported by academic major: Allied Health (81), Anthropology (130), Biology (91), Chemistry (97), Communication (73), Computer Science (151), Criminal Justice (128), Education (60), Engineering (83), English (64), History (69), Liberal Arts (77), Management/Business (88), Math (67), Physics (123), Political Science (62), Psychology (71), Sociology (90), and Undeclared (58). The variability of Internet use based on major may suggest varying needs for students in those particular majors or possibly signify the different personality types drawn to a particular major.

To examine differences among students in different academic majors, Anderson (2001) divided the 19 majors represented in the sample into three groups: hard sciences, arts and sciences, and liberal arts. The three groups were determined by the amount of science and math classes that are typically required of the major and if the major is object-oriented or person-oriented. The analysis found a significant difference that suggested that hard science majors spent significantly more voluntary time online (123 minutes per day) than the arts and science majors (81 minutes per day) or the liberal arts majors (79 minutes per day). A chi-square analysis also found significant (p<.01) differences within the three groups of academic majors in terms of meeting the criteria for Internet Dependence (three or more symptoms). It was found that 74% of students meeting the criteria for dependence were from the hard science group. In the other two
groups, 16% of arts and sciences students and 10% liberal arts students met the criteria for Internet Dependence.

Anderson (2001) also explored how Internet use may cause possible academic, social, or lifestyle problems. The study asked students to report the impact Internet use has had on their academic achievement, meeting new people, participating in extracurricular activities, sleep patterns, and real life relationships. Most students reported little impact on these areas of functioning from Internet use. Conversely, students who averaged using the Internet for 400 or more minutes per day did report difficulties with their sleep patterns. Anderson suggested that the students’ lack of concern about problems related to their Internet use might be similar to that of college students’ tendency to underreport the impact of alcohol use.

Based on the data analysis, Anderson (2001) found that 9.8% of college students surveyed fit the study’s definition of Internet Dependence (three or more symptoms of Internet Dependence). The vast majority of the dependent students were male. Students meeting the criteria for Internet Dependence spent significantly more voluntary time online (p<.01). Dependent students averaged 229 minutes of voluntary Internet use per day, whereas non-dependent users averaged 73 minutes of voluntary Internet use per day. Surfing the World Wide Web (WWW) and email were the most common Internet activities among dependent students. Internet dependent college students also were significantly more likely (p<.05) to report that their time online had a negative impact on their academics, meeting new people, and their sleep patterns.
Anderson (2001) concluded that the results indicated there was a need for further research. It was suggested that some extreme users might have been underrepresented since the study was conducted during class time and the most extreme users may not regularly attend their classes. Also, it was noted that most of the dependent group was relatively small in terms of numbers and predominantly male. Since Internet use is generally encouraged and often required by many colleges, Anderson (2001) believes that multiple levels of intervention will be required to help students who become dependent on the Internet.

**Scherer’s Internet Dependency Research**

Scherer (1997) conducted one of the earliest studies of PIU that focused specifically on the college student population. An initial group of 531 students at the University of Texas at Austin participated in the study. The sample was narrowed to 381 students who used the Internet at least once per week. Scherer (1997) utilized ten screening questions that paralleled the symptoms of chemical dependencies. Students that endorsed three or more of the screening questions were classified as “Internet Dependent.” Based on the stated criteria, 13% of the sample met the Internet Dependency criteria. Additionally, it was found that male students were significantly more likely to be in the dependent group (72% of the dependent group was male).

Scherer (1997) also noted that the dependent group averaged 11 hours online per week; a relatively small amount by current standards. The non-dependent group reported only eight hours online per week. Scherer’s study may be best viewed as an early
exploration of PIU and is most likely a reflection of the Internet use patterns that were the

norm at the time of the study.

Davis, Smith, Rodrigue, and Pulvers’ IAD Research

Davis, Smith, Rodrigue, and Pulvers (1999), compared the Internet usage of college students on two college campuses. Their study sought to determine and compare the availability of Internet access and usage by college students at a small private liberal arts college and at a medium sized public university. The study sample consisted of 349 undergraduates (242 women, 107 men) at the medium sized university and 184 (101 women, 83 men) undergraduates at the small liberal arts college.

All subjects in the Davis et al. (1999) study completed a questionnaire requesting demographic information, information about Internet accessibility, weekly time spent online, and types of Internet applications utilized. The subjects were also questioned about if their time online had caused problems with work, school, or with relationships, and to give details about the nature of any problems reported. The subjects completed the assessment during regular class sessions. All subjects signed an informed consent agreement and completed testing in less than 15 minutes.

Davis et al. (1999) found that the vast majority of students at both the medium sized state university (93%) and the small private liberal arts college (91%) had Internet access. Time spent online at the medium sized state university ranged from zero to 55 hours per week with an average of 4.66 hours per week spent online. The men at the medium sized state university spent significantly more time online (6.89 hours per week) than women (4.66 hours per week) at the medium sized state university. Students at the
small private liberal arts college reported significantly lower amounts of time spent online (2.49 hours per week). The hours per week spent online at the small private liberal arts college ranged from zero to 20 hours per week. Men (2.90 hours per week) and women (2.19 hours per week) at the small private liberal arts college did not vary significantly in terms of time online.

Davis et al. (1999) utilized a 2 x 2 factorial ANOVA including sex of the participant and size of the college as factors on the hours per week online. The analysis of the data in the study produced significant results for the sex of the participant, $F(1,517) = 7.56, p<.05$, and for the size of the college, $F(1, 517)=4.06, p: <.05$, main effects, and the interaction of these two factors, $F (1,517)=5.08, p<.05$. The study also utilized the Newman-Keuls procedure to test the significant interaction, which indicated that men at the medium sized public college spent significantly ($p<.05$) more time online than all other groups. This test also found that women at the medium sized public college spent significantly ($p<.05$) more time online than men and women at the small liberal arts college. Students at both the public and private colleges who spent 25 or fewer hours online did not report any negative consequences with work, school, or relationships as a result of time spent online. Only students at the public university that spent more than 25 hours online per week reported any negative consequences from being online.

Davis et al. (1999) concluded that their results would suggest that there is not currently a reason for administrators at the private college to be overly concerned about their students Internet use. The average student at the private university was online for less than three hours and that no students reported negative consequences from their time
spent online. However, the study did add a caution for the students at the small liberal arts school. Even though Internet Addiction Disorder did not appear to be present at the time of the study, the findings did not guarantee that Internet Addiction would not become an issue for the small college’s students at a later time. Conversely, the study suggested that there might be a current cause for concern about students’ Internet usage at the public university, especially for male students in this setting since they spent significantly more time online than any other group.

In analyzing their results, Davis et al. (1999) hypothesized that the public and private schools may attract different kinds of students. The private university may have attracted students that are less likely to sacrifice their academic success for non-academic activities like the Internet. However, the researchers stated that currently there is no empirical data to back up this hypothesis. A second conclusion that also lacked empirical validation suggested that students at the public college were more likely to answer the questionnaire in a more honest manner due to the greater anonymity likely experienced at the larger public school. The authors finally concluded that further study was warranted given the continued technological advances.

**Morahan-Martin and Schumacher’s PIU Research**

Morahan-Martin and Schumacher (2000) conducted a survey of 277 undergraduates (150 male and 127 female) to assess the incidence and correlates of PIU in the college student population. The study included paper and pencil measures for demographics, Internet experience, PIU, Internet sites visited, reasons for Internet use, behaviors and attitudes about the Internet, and a measure of loneliness. The study
utilized 13 screening questions to determine PIU status. The screening questions focused on Internet use that was associated with academic, occupational, or social problems. The screening questions also addressed symptoms such as distress, tolerance, and Internet use for the purpose of mood alteration. Students that positively endorsed four or more of the screening questions were classified as “pathological Internet users” (8.1%). Students that reported one to three symptoms were classified as having “limited symptoms” (64.7%) and students that reported zero symptoms were designated as “NO” (27.2%).

Other significant findings from Morahan-Martin and Schumacher (2000) included the finding that pathological users (M = 8.48, SD = 6.99) spent significantly more time online ($F(2,268) = 19.39; p < .001$) than students in the limited symptom (M = 3.18, SD = 4.01) and no symptom groups (M = 2.47, SD = 2.47). In terms of gender differences, male students were found to be significantly more likely to be pathological users (12.2% for males versus 3.2% for females). Male students also reported more pathological symptoms (M = 1.64, SD = 1.72) on average than female students (M = 1.23, SD = 1.15). Morahan-Martin and Schumacher (2000) suggested that the observed gender differences were likely a result of the types of content that male students are more likely to access such as online gambling, interactive games, and pornography; all of which have been associated with compulsion-like use. The study also found support for a relationship between loneliness and pathological use; pathological users scored significantly higher on the UCLA Loneliness Scale.

Morahan-Martin and Schumacher (2000) concluded that certain students may experience problems from their time and that the amount of time spent online might be
far less than what prior studies had suggested would be the level at which the user experienced problems. The factors that emerged from Morahan-Martin and Schumacher (2000) as significant to the study of PIU included changed social interaction, escapism, mood alteration, loneliness, and feeling of mastery while online. The authors of the study suggested that future research should be conducted both online and offline with more diverse populations.

Kubey, Lavin, and Barrows’ Internet Dependency Research

Kubey, Lavin, and Barrows (2001) attempted to answer two research questions relating to college students’ Internet use. Research question one asked, “Is there self-report evidence to support the concept of Internet dependency in college students? If so, what are its correlates?” The second research question asked, “Is there evidence that heavier Internet use and/or so-called Internet dependency may be associated with self-reported academic performance problems?” The study utilized a paper-and-pencil questionnaire that included 43 multiple-choice items covering topics such as Internet use, study habits, academic performance, and personality assessments. Five hundred seventy-six students at Rutgers University completed the questionnaire before the start of three classes. Participants were instructed to only report information about their recreational Internet use. Kubey et al. (2001) told participants, “We are only interested in your spare time or personal use of the Internet and are not concerned with measuring use that is school- or work-related.” The authors included this statement in the hopes that it generate results that primarily reflected Internet use that the students had control over.
The research of Kubey et al. (2001) was based primarily upon two statements: 1) “I think I may have become psychologically dependent on the Internet.” 2) “About how often, if at all has your school work been hurt because of the time you spend online?” The students were asked to rate their agreement, disagreement, or neutrality on the statements on a five-point Likert scale. For the first statement, students who responded, “Agree” or “Strongly Agree” were classified as the Internet dependent group. The group who responded with “Disagree,” “Strongly Disagree,” or “Neutral,” was classified as the non-dependent group. A similar procedure was employed to form an academically impaired group and an academically non-impaired group. Kubey et al. argued that the wording of their statements probably increased the reports of dependence, but noted that stronger wording that directly stated dependence would be more likely to produce defensive self-reports. It was also noted the goal of the research was to determine correlational relationships and not to determine exact prevalence rates.

Kubey et al. (2001) tested the validity of their measures of dependency by checking if the students’ responses were consistent based on their group designation. It was predicted that psychological characteristics such as guilt, loss of control, academic impairment, sleep problems, and missed classes would be consistent with dependency and increased Internet use. The study employed media questions to measure hours per week online and the hours spent on different types of Internet applications each week. The media questions divided recreational Internet use into seven categories: surfing/browsing, email, chat, posting to newsgroups/listservs/forums, building websites, shopping, and MUDs. The students reported their weekly hours of use for each of the
seven categories by using a 16-point scale that reported one-hour increments ranging from zero to 15 or more.

Based on the criteria established by Kubey et al. (2001), 9.26% of their sample was categorized as Internet dependent. Approximately half of the Internet dependent group was male despite two thirds of the sample being female. This finding was consistent with previous research with the college student population (Morahan-Martin & Schumacher, 2000; Scherer, 1997) that has suggested that males are more likely to become dependent on the Internet. Internet dependent students were significantly more likely to agree or strongly agree with statements such as, “I feel I do not always have control over my Internet use,” “Some people have suggested I spend too much time online,” and “Sometimes I feel guilty about the amount of time I spend on the Internet.” Internet dependent students were also significantly more likely to report that “frequently” or “very frequently” their Internet use resulted in staying up late and feeling tired the next day because of their time online. Furthermore, students in the Internet dependent group reported spending nearly triple the amount of recreational time online of students in the non-dependent group.

Kubey et al. (2001) classified 14% of their sample as academically impaired due to their Internet use. Over 56% of the Internet dependent group was also classified as academically impaired. Therefore, four times as many Internet-dependent students were classified as academically impaired as non-dependent students. The academically impaired group also reported weekly Internet use that was twice as high as the overall sample. Kubey et al. (2001) concluded that these results add additional support that there
is a relationship between Internet dependency and academic impairment (Kandell, 1998; Morahan-Martin & Schumacher, 1997). The study also supported previous findings (Scherer, 1997; Kraut, Patterson, Lundmark, Kiesler, Mukphadhyay, & Scherlis, 1998) that loneliness is a factor in problematic Internet use.

Kubey et al. (2001) also found that use of all Internet applications is higher among the Internet dependent and academically impaired students. Perhaps the most significant difference in Internet applications used was between forms of synchronous and asynchronous applications. Synchronous applications allow users to communicate simultaneously or in “real time.” Examples of synchronous applications include chat rooms, instant messaging, and Multiple User Domains (MUDs). Asynchronous applications differ in that they allow persons to communicate “in turn” or one-at-a-time. Some examples of asynchronous applications include e-mail and listservs. Previous research (Anderson, 1999; Scherer, 1997; Young, 1996) and Kubey et al. (2001) indicated that dependent users were significantly more likely to utilize synchronous applications than non-dependent users.

Kubey et al. (2001) concluded that the results of their study were consistent with previous research and there are strong indications of significant psychological issues associated with heavier Internet use. It was noted that relatively low levels of Internet use were reported in the study and that recreational use alone does not completely capture how individuals use the Internet. The research supported predictions that heavier Internet use is associated with loneliness and academic impairment. Kubey et al. (2001) noted that their results do not indicate whether or not these students’ problems would exist without
the Internet. Furthermore, professionals in higher education need to be aware of the problem of Internet dependence. The problem of PIU appears to be affecting a small, and possibly growing percentage of the undergraduate student population.

*Davis, Flett, and Besser’s Problematic Internet Use Research*

Davis, Flett, and Besser (2002) engaged in one of the most extensive efforts to validate an assessment of problematic Internet use. The study also utilized the college student population as the source of its sample. Davis (2001b) developed the Online Cognitions Scale (OCS) based on his Cognitive-Behavioral Model of Pathological Internet Use (Davis, 2001a). Previous assessment attempts were often not based on a particular theory and were one-dimensional; whereas the OCS included subscales for procrastination, rejection sensitivity, loneliness/depression, and impulsivity. Moreover, few previous studies have attempted to validate their assessments against already established assessments of similar disorders (Armstrong et al., 2000). In the long term, Davis et al. (2002) sought to create an assessment of problematic Internet use that possessed a solid empirical basis that all previous assessments lacked.

In order to test the validity of the OCS, Davis et al. (2002) administered 325 questionnaires to students in an industrial/organizational psychology class at a large Canadian university. The entire battery of tests was completed by 211 participants. The measures utilized were extensive and included a demographic questionnaire, the OCS, the Barratt Impulsiveness Scale 11 (BIS-11) (Corchran & Fischer, 2000), the Center for Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977), the UCLA Loneliness Scale-version 3 (Russell, Peplau, & Cutrona, 1980), the Procrastinatory
Cognitions Inventory (PCI) (Stainton, Lay, & Flett, 2000), the Internet Behavior and Attitudes Scale (IBAS) (Morahan-Martin & Schumacher, 2000), and the Rejection Sensitivity Questionnaire (RSQ) (Downey & Feldman, 1996). The demographic questionnaire obtained information such as age, gender, average number of hours online per week, and if the subjects have had problems as a result of their time online. The BIS-11 is a 30-item survey that assesses impulsivity as a characteristic that is not dependent upon anxiety. The CES-D is a 20-question assessment that measures depressive symptoms in the general population. The CES-D places emphasis on the affect of depressed mood. The UCLA Loneliness Scale measures the emotional response to a disparity between hoped for and accomplished levels of social contact and has been used extensively with student populations (Davis, et al., 2002). The PCI is an 18-item assessment of the trait procrastination and negative affect. The IBAS is a 25-item assessment of feelings of competence while online and the social components of Internet use. The RSQ describes 18 hypothetical situations in order to assess a person’s sensitivity to rejection in social scenarios. Each of these measures demonstrated good to high internal consistency (Davis et al., 2002).

The OCS (Davis, 2001b) is a 36-item assessment that is designed to measure problematic Internet use. Items on the OCS are derived from symptoms reported in the literature on PIU. The OCS items concentrate primarily on cognitions rather than behaviors. The OCS yields four subscales (social comfort, loneliness/depression, diminished impulse control, and distraction). The OCS can also be scored as a global measure of PIU (Davis et al., 2002). The OCS has a high internal consistency as measure
of PIU (alpha = 0.94) and for its subscales: social comfort (alpha = 0.87), loneliness/depression (alpha = 0.77), diminished impulse control (alpha = 0.84), and distraction (alpha = 0.81).

Davis et al. (2002) performed correlational analyses on the four OCS dimensions. The analysis found the loneliness/depression and social comfort portions of the assessment were positively related to hours per week online, rejection sensitivity, and procrastination. The loneliness/depression and social comfort dimensions also were demonstrated significant correlations with other assessments of depression, loneliness, and PIU. No relationships were found between loneliness/depression, social comfort, and impulsivity. The dimensions of distraction and diminished impulse control were positively correlated with hours online per week, rejection sensitivity, depression, loneliness, and procrastination. Also, Davis et al. (2002) found that the correlations between the four subscales were mostly significant and in the predicted directions.

Davis et al. (2002) concluded that the validation of the OCS supported the idea that PIU consists of more dimensions than spending an extreme amount of time online. The authors believed that they had introduced the OCS as a new assessment that was both multidimensional and theory-based. There was also support for the idea that PIU is a form of Impulse Control Disorder. Subjects who scored higher in diminished impulse control consistently scored higher on items relating to obsessive thoughts about the Internet and lacking an ability to reduce Internet use. Subjects in this study who scored higher on measures of loneliness also tended to use the Internet for the purpose of social comfort and score higher on measure of depression. The association between depression
and PIU has been noted by previous research (Shapira, et al., 2000; Young, 1998). The dimension of distraction was associated with using the Internet as a means of distraction or procrastination. Davis et al. (2002) concluded that further testing of the OCS in clinical and business settings was warranted by the findings. Further testing would serve to increase the predictive validity of the OCS and may also accomplish the determination of other dimensions of PIU.

Summary of the Literature

Research related to Pathological Internet Use (PIU) has generated various operational definitions (Anderson, 2001; Davis, 2000; Grohol, 1997; Griffiths, 1998; Young, 1996). These varying definitions have led to significant confusion and debate over the existence and etiology of the disorder. Despite the general lack of agreement or cross-referencing among various studies (Davis, et al., 2002), most of the evidence suggests that PIU is form of Impulse Control Disorder (Shapira, et al., 2000; Young, 1996). Even though some symptoms are not reported or evaluated across all studies, there are several symptoms and behaviors that are found consistently the research. Symptoms of PIU that are consistently reported include: (a) preoccupation with the Internet or Internet related activities, (b) tolerance in terms of needing to increase the amount of time spent on the Internet in order to produce the desired effect, (c) repeated attempts to reduce or discontinue Internet use or attempts to avoid a particular type of Internet content, (d) withdrawal symptoms in the form of restlessness or irritability when attempts are made to reduce or discontinue Internet use or the user is forced to reduce or discontinue Internet use, (e) use of the Internet to escape from other problems or
dysphoric feelings, (f) lying to others to cover the extent of involvement with the Internet or type of content accessed, (g) having committed illegal acts online (e.g., hacking into computer networks, copying files illegally, downloading illegal content), (h) has jeopardized or lost a significant relationship, job, or educational or career opportunity due to involvement with the Internet, and (i) feelings of guilt about the amount of time spent online and/or guilt related to the activities engaged in while online (Anderson, 2001; Armstrong, et al., 2000; Kubey, et al., 2001; Morahan-Martin & Schumacher, 1997; Griffiths, 1998; Young, 1996). These symptoms are also consistent with current definitions for an Impulse Control Disorder Not Otherwise Specified (ICD-NOS) based on current DSM-IV criteria.

Overall, the research of PIU has consistently produced three findings. First, the research supports the existence of some form of PIU (Anderson, 2001, Armstrong, et al., 2000; Davis, et al., 2002; Morahan-Martin & Schumacher, 2000; Young, 1998). Second, the research has corroborates the notion that the college student population is especially vulnerable to developing PIU due to ease of access, requirements to use the Internet, and developmental issues (Anderson, 2001; Kandell, 1998). Third, the limited amount of research to date suggests a need for further investigation through quality research efforts (Davis et al., 2002). The present study seeks to accomplish three objectives. First, the present study seeks to examine the prevalence of PIU among the college student population. Secondly, the study will examine potential correlates of PIU among the college student population. Finally, the present study seeks to determine if there are
group differences in terms of PIU symptoms reported among students based on gender and class standing.
CHAPTER THREE:

METHODOLOGY

The following chapter summarizes the identification of independent and dependent variables, operational definition of variables, sampling strategies, assessment tools, and data analysis procedures. The present study is designed to explore the construct of Pathological Internet Use (PIU) in the college student population. An online survey questionnaire was employed to perform the data analysis. The data analysis addresses three research questions.

Primary Research Questions and Hypotheses

RQ1: What percentage of college students report symptoms that are consistent with the definition of PIU?

RQ2: Is there an interaction between gender and class standing that impacts the number of PIU symptoms reported?

RQ3: Are there group differences in the number of PIU symptoms reported by students based on their class standing?

RQ4: Are there group differences in the number of PIU symptoms reported by students based on their gender?

Ho1: There will not be a significant interaction between gender and class standing in terms of number of PIU symptoms reported.

Ha1: There will not be a significant interaction between gender and class standing in terms of number of PIU symptoms reported.
Ho2: Freshmen students will report significantly more symptoms of PIU than upperclassmen (Sophomores, Juniors, and Seniors).

Ha2: Freshmen students will not report significantly more symptoms of PIU than upperclassmen (Sophomores, Juniors, and Seniors).

Ho3: Male students will report significantly more symptoms of PIU than female students.

Ha3: Male students will not report significantly more symptoms of PIU than female students.

Identification of the Population

The target population for this study is undergraduate level college students attending a large, public, residential university. This target population was selected because it is a population that extensively uses the Internet (Jones, 2002) and may be more at risk of developing PIU than the general population (Hall & Parsons, 2001; Kandell, 1998). A large, Midwestern university was utilized due to the potential for a large sample size and the prospect of the results generalizing to many other educational settings and possibly the non-student population.

Data Collection Procedures

College students at a large Midwestern university were recruited to complete the three-part questionnaire. The questionnaire was available online for a three week period during the fall term. The subjects were recruited in two ways: (a) Randomly generated student email addresses provided by the host university, (b) Flyers posted in the university owned student housing. Regardless of the recruiting method, all subjects
completed the same online survey that included demographic questions, the Cognitive-Behavioral Checklist (CBC), and two subscales of the Online Cognitions Scale (OCS). The online questionnaire was hosted on the participating university’s computer network. The online survey began with an informed consent statement prior to the demographic questionnaire, CBC, and OCS.

The participants that were recruited by email received an email message that described the present study and requested that the participant click on a link in the message to participate in the study. The link included in the message directed the participant’s web browser to the online survey. Email messages were sent directly to 3,440 student e-mail accounts. The 3,440 email accounts were supplied and randomly selected by the participating university’s computer network service department. Students in the sample were not required by the university to utilize the email accounts supplied by the university. However, students in the sample are directly and indirectly encouraged by various policies and educational requirements to use email. All students at the host university also have the option of setting their university email account to forward messages to an email account selected by the student.

Since all students were not required to utilize the university’s email system, additional participants were solicited via flyers posted in university owned housing. The flyers posted in the student housing included a brief description of the research and tear-off mini flyers with a World Wide Web (WWW) address to access the online questionnaire. Due to the long web address required to access the online survey (http://iliad.cats.ohiou.edu/html/surveys/C3682509C2E14B078A3E67DC37DA3799.html),
it is assumed that the vast majority of the sample was obtained from the students contacted via email (these individuals were not required to manually type the web address into their web browsers). Additionally, the online survey technology employed in the present study did not provide a means for tracking which source of recruiting lead the subject to participate in the study.

*Instrumentation*

The online survey questionnaire consisted of three instruments: a demographic information sheet, the CBC checklist that assesses for an Impulse Control Disorder related to Internet Use, and the two subscales (Loneliness/Depression and Impulsivity) from the OCS (Davis et al., 2002).

*Demographic Information Sheet*

The demographic information sheet collected information about the subject’s gender, age, academic major, ethnicity, class standing, primary language spoken, average number of hours online per week, and Internet application used most frequently. The demographic information sheet also contained a question to screen out non-students and students from colleges other than the host institution. This screener question was necessary due to the questionnaire being posted on the World Wide Web. The demographic information section also included supplemental questions to assess for negative impacts of Internet use on relationships, academic success, sleep patterns, and being late for or missing classes.

The demographic information sheet provided categories for the independent variables for research questions numbers two and three. The two independent variables
in the present study are: (1) gender, (2) class rank. Each of the independent variables was self-reported on the demographic information sheet.

Cognitive-Behavioral Checklist

The second research tool is the Cognitive-Behavioral Checklist (CBC), which was developed for the present study. The checklist is based on prior research and assessments of PIU (Anderson, 2001; Armstrong et al., 2000; Brenner, 1997; Davis et al. 2002; Greenfield, 2000; Kubey et al., 2001; Morahan-Martin & Schumacher, 2000; Young, 1998). The CBC differs from previous measures of PIU in that it eliminates questions that have become dated (questions that do not reflect how the Internet is currently used) and it adds the dimension of type of Internet content accessed as a contributor to PIU to the screening questions. Since there is not currently one agreed upon definition of PIU (Grohol, 1999) and there is not currently a consistently validated measure of PIU (Davis, Flett, & Besser, 2002), the Cognitive-Behavioral checklist was created for this study to discriminate between pathological and non-pathological Internet users. However, it must be noted that the while the CBC appears to have face validity, the psychometric properties of the CBC have not been established.

The CBC is a true-false survey that assesses the nine symptoms that are most consistently reported and assessed in the literature on PIU (Anderson, 2001; Armstrong et al., 2000; Brenner, 1997; Davis et al. 2002; Kubey et al., 2001; Morahan-Martin & Schumacher, 2000; Scherer, 1997; Young, 1996; see also the Summary of the Literature in Chapter Two). The nine symptoms assessed by the CBC included: (a) preoccupation with the Internet or Internet related activities, (b) Tolerance or a need to increase time
online in order to achieve satisfaction, (c) repeated attempts to control, reduce, or stop Internet use or attempts to avoid certain types of content, (d) withdrawal or irritability when attempting to reduce time online or when forced to reduce time online, (e) Internet is used to escape problems or as a means of relieving dysphoric mood (e.g., helplessness, guilt, anxiety, depression), (f) lying to family members, significant others, employers, or therapists to conceal extent of involvement with the Internet or lying to conceal the type of content accessed while online, (g) has committed illegal acts online (e.g., hacking into computer networks, copying files illegally, downloading illegal content, not including swapping or downloading of music files), (h) has jeopardized or lost a significant relationship, job or educational opportunity because of involvement with the Internet, (i) feelings of guilt about the amount of time spent online and/ or guilt related to the activities engaged in online.

The CBC measured one dependent variable. The purpose of this assessment was to determine what percentage of the sample might be experiencing symptoms consistent with an Impulse Control Disorder. The dependent variable is the presence or absence of a sufficient number of self–reported symptoms to meet the criteria for an Impulse Control Disorder related to Internet use. The present study will report the percentage of participants that could be categorized as experiencing symptoms consistent with an Impulse Control Disorder related to their Internet use based on the reporting of four or more symptoms by a participant. Prior research has used a range of cut-off scores including: Anderson (2001): three or more, Brenner (1997): five or more, Greenfield (1999): five or more, Morahan-Martin and Schumacher (2000): four or more, Scherer
(1997): three or more, Wang (2001): four or more, and Young (1998): five or more symptoms required for a designation of PIU. For the present study, the presence (self-report) of four symptoms (or more) are utilized as the cut-off score due to the assumption that this number of symptoms or greater reported would rise to a level of pathology that would be of clinical significance. Subjects reporting four or more symptoms of an Impulse Control Disorder will be categorized as experiencing PIU. Subjects reporting three or fewer symptoms of an Impulse Control Disorder related to their Internet use will be categorized as non-Pathological Internet Use.

**Online Cognitions Scale**

The third instrument consisted of two modified subscales from the Online Cognitions Scale (OCS). The OCS subscales will be utilized on a post hoc basis to examine various correlates of PIU that may not be addressed by the primary research questions. The OCS was developed and validated by Davis, Flett, and Besser (2002) and is consistent with previous research on the construct of PIU. The OCS places more emphasis on cognitions related to Internet use rather than self-reported online behaviors (Davis, et al, 2002). The items are also based on adaptations of related measures of constructs including procrastination, depression, impulsivity, and pathological gambling.

The OCS consists of 36-items that assess 4 facets of PIU. The assessment yields scores for Impulsive Problematic Internet Use, Lonely/depressed Problematic Internet Use, Distraction Problematic Internet Use, Social Comfort Problematic Internet Use, and a Total Problematic Internet Use score (Davis, Flett, and Besser, 2002). The OCS has demonstrated high internal consistency as a total measure of PIU with an alpha level of
.94 and for each of its subscales: social comfort = 0.87, loneliness/depression = 0.77, diminished impulse control = 0.84, and distraction = 0.81 (Davis, et al., 2002).

Participants are asked to respond to items that include statements about the participant’s thoughts about the Internet. Answer options for the OCS questions were: “Agree,” “Disagree,” and “No Opinion.” Some examples of OCS items include statements such as: “I often keep thinking about something I experienced online well after I have logged off.” and “People complain that I use the Internet too much.”

The OCS has been validated against the following assessments: Barratt Impulsiveness Scale 11 (Cochran & Fischer, 2000), Center for Epidemiological Studies Depression Scale (Radloff, 1977), the UCLA Loneliness Scale version 3 (Russell, Peplau, & Cutrona, 1980), Procrastinatory Cognitions Inventory (Stainton, Lay, & Flett, 2000), the Internet Behavior and Attitudes Scale (Morahan-Martin & Schumacher, 2000), and the Rejection Sensitivity Questionnaire (Downey & Feldman, 1996).

The modified versions of the subscales of the OCS for Impulsive Problematic Internet Use (10 items) and Lonely/depressed Problematic Internet Use (six items) will be utilized to collect supplemental data. The OCS will not be used to address the primary research questions due to its lack of cut-off scores for distinguishing between pathological and non-pathological Internet use.

Operational Definitions of the Variables

**Hours Online:** Accounts for all time spent online for any purpose in any of the following activities: browsing the World Wide Web (WWW), sending/receiving E-mail, participating in chat rooms/instant messaging, interactive games, downloading software
or music, auctions/shopping, gambling, pornography, and a general category of other online activities (Anderson, 2001). No attempt was made to separate required (work and/or academic) Internet use from recreational Internet use due to the frequency at which college students multitask between required and recreational Internet use (Jones, 2002).

**Most Frequent Online Activity:** Participants will report the Internet application they use most frequently on the demographic information sheet. Participants will be asked to identify the Internet applications or tools: Email, Instant Messaging/Chat, Web Browser / Surfing, Music Sharing/File Swapping, Online Games/MUDS, Auctions/Shopping, Gambling, Pornography, or Other.

**Pathological Internet Use (PIU):** For the purposes of this study, Pathological Internet Use is conceptualized as an impulse control disorder related to Internet misuse. Due to the lack of one agreed upon operational definition of PIU in the literature (Grohol, 1999), the following nine criteria are used to distinguish PIU: (a) preoccupation with the Internet or Internet related activities, (b) a need to spend increasing amounts of time online in order to achieve desired excitement, (c) repeated attempts to control, reduce, or stop Internet use and/or to avoid certain types of online activities, (d) restlessness or irritability when attempting to cut down or stop Internet use, (e) Internet is used to escape problems or as a means of relieving dysphoric mood (e.g., helplessness, guilt, anxiety, depression), (f) lying to family members, significant others, employers, or therapist to conceal extent of involvement with the Internet or types of activities engaged in online, (g) has committed illegal acts online (e.g., hacking into computer networks, copying files
illegally, downloading illegal content), (h) has jeopardized or lost a significant relationship, job or educational opportunity because of involvement with the Internet, and (i) feelings of guilt about the amount of time spent online and/or guilt related to the activities engaged in online. The prior nine symptoms are the most consistent among current operational definitions (Anderson, 2001; Davis, 2001a; Goldberg, 1996; Greenfield, 2001; Young, 1997). For the purposes of the present study, persons reporting four more of the above symptoms will be categorized as positive for PIU. Persons reporting three or fewer symptoms named above will be classified as negative for PIU.

**Self-Reported Academic Problems:** Participants will be asked to respond to the following statement relating to their academic success and Internet use: “Indicate the extent to which the use of the Internet affects your Academic Success.” The participant will then choose from the following responses: 1) Affects me in a positive way, 2) Affects me in a negative way or, 3) Has a neutral impact on me.

**Self-Reported Sleep Problems:** Participants will be asked to respond to the following statements relating to their Internet use and their ability to get enough sleep. “Indicate the extent to which the use of the Internet affects your ability to Get Enough Sleep.” The participant will then choose from the following responses: 1) Affects me in a positive way, 2) Affects me in a negative way or 3) Has a neutral impact on me.
Data Analysis Procedures

Research Question 1: What percentage of college students report symptoms that are consistent with the definition of PIU?

This research question is addressed through the analysis of the data generated by the Cognitive-Behavioral Checklist (CBC); more specifically the numbers of symptoms reported by participants will be examined. Several descriptive statistics will be reported and comparisons to prior research will be made in the final chapter of this paper. The intent of this question is to determine whether symptoms reported by the students in the present study are consistent with previous studies of PIU in the college student population (Anderson, 2001; Armstrong, Phillips, Saling, 2000; Kubey, Lavin, & Barrows, 2001; Morahan-Martin & Schumacher, 2000; Scherer, 1997). The second objective of this research question is to determine the prevalence of PIU among college students.

Research Question 2: Is there an interaction between gender and class standing that impacts the number of PIU symptoms reported?

Research Question 2 is addressed through the data collected by the demographic information sheet (class standing and gender reported) and the CBC (number of symptoms reported). Research Question 2 will be assessed with a 4 x 2 two-way analysis of variance (ANOVA). The present study seeks to determine if there is an interaction between gender and class standing that impacts the number of PIU symptoms reported. Differences in PIU incidence based on gender have been found by prior studies (Anderson, 2001; Kubey, et al., 2001; Morahan-Martin & Schumacher, 2000).
Conversely, previous PIU research has not addressed if students at different stages of their undergraduate education might look different in terms of symptoms and prevalence rates. Student development theory has suggested that students face different development tasks during each successive year in college (Chickering & Reisser, 1993; Creamer, 1980; Kandell, 1998). Therefore, these developmental issues may impact how students use the Internet differently depending on their class standing.

Research Question 3: Are there group differences in number of PIU symptoms reported by students based on their class standing?

Research Question 3 is addressed through the data collected by the demographic information sheet (class standing reported) and the CBC (number of symptoms reported). Research Question 3 will be assessed with a 4 x 2 two-way ANOVA. Kandell (1998) suggested that college students as a group may be an at-risk population for development of PIU. However, previous PIU research has not addressed if students at different stages of their undergraduate education might look different in terms of symptoms and prevalence rates. Student development theory has suggested that students face multiple development tasks during their time in college (Chickering & Reisser, 1993; Creamer, 1980; Kandell, 1998). It is assumed from a developmental perspective that freshmen (first-year) students may be more at risk for PIU than the overall college student population due to the developmental tasks that face freshmen students such as managing emotions and developing mature interpersonal relationships (Chickering & Reisser, 1993). Therefore, the present study predicts that freshmen will report significantly more symptoms of PIU and spend more time online than upperclassmen.
Research Question 4: Are there group differences in number of PIU symptoms reported students based on their gender?

Research Question 4 is addressed through the data collected by the demographic information sheet (gender reported) and the Cognitive-Behavioral checklist (number of symptoms reported: Pathological Internet User or Non-Pathological Internet User). Research Question 4 will be assessed with a 4 x 2 two-way ANOVA. The present study seeks to determine if gender differences found by prior studies (Anderson, 2001; Kubey, et al., 2001; Morahan-Martin & Schumacher, 2000) will be found in the present sample. The present study predicts that male college students will continue to report significantly more symptoms of PIU and will spend more time online than female college students due to males tendency to access content that has more frequently associated with problematic behavior (Nielsen NetRatings, 2003).

Two-Way ANOVA Considerations

This study utilizes a two-way variance (ANOVA) to address the second, third, and fourth research questions. There are two independent variables that are categorical (gender and class rank) and one factor (number of symptoms reported on the Cognitive-Behavioral Checklist) that is a continuous variable. Therefore, a two-way analysis of variance is the correct data analysis technique for research questions two, three, and four (Cozby, 1993). The ANOVA is used to make inferences about differences in the means of two or more groups (Harris, 1998). According to Runyon and Haber (1991), the two-way ANOVA offers the following advantages: (a) allows the evaluation of more than one variable at a time, (b) permits the assessment of possible interaction effects between and
among variables, and (c) represent an effective way of using research time because of the amount of information provided by a single statistical procedure.

Assumptions of the Data

Harris (1998) stated that the following assumptions that must be met in order to utilize a two-way analysis of variance (ANOVA): (a) data are measured on an interval or ratio scale or measurement, (b) the scores are randomly or independently sampled, (c) the distribution of the dependent measure is normal in the populations that the data collected from, and (d) the populations share equal variances. Additionally, the two-way ANOVA is robust to breaches of the suppositions of normal distributions and equal variances (Harris, 1998).
CHAPTER FOUR:

RESULTS

Sample Demographics

From an initial sample of 780 participants, 731 valid surveys were completed online. Participants were excluded from the analysis for the following reasons (number excluded in parenthesis): attendance at university other than the target school for the sample (2), not a current college student (2), under target age range of 18-24 (6), over target age range of 18-24 (27), graduate student status (2), and excessive number (4 or more) of screening (research) questions skipped (10) for a total of 49 invalid or excluded surveys.

The valid surveys returned represented 503 (68.8%) female students, 227 (31.1%) by male students, and 1 (.1%) did not respond to the gender question. In terms of class representation, the sample included 262 (35.8%) freshmen, 172 (23.5%) sophomores, 124 (17.0%) juniors, and 173 (23.7%) seniors. The gender representation among classes included freshmen: female: 173 (66.0%), male: 89 (34.0%); sophomores: female: 126 (73.3%), male: 46 (36.5%); juniors: female: 124 (68.5%), male: 39 (31.4%); and seniors: female: 119 (68.8%), male: 53 (30.6%). In terms of ethnicity the sample included: African-American/Black: 9 (1.2%), Asian: 5 (.7%), Caucasian/White: 685 (93.7%), Latino/Hispanic: 13 (1.8%), Native American: 1 (.1%), Multiethnic 11 (1.5%), Other: 5 (.7%), and no ethnicity reported: 2 (.3%).

An exact response rate could not be calculated due to the online data collection method employed. Participants were recruited via flyers posted in university-owned
housing and via 3,440 email addresses that were randomly generated by the host institution. Although it can be assumed that some potential participants declined to participate when they accessed the survey online, there are several other reasons the recruitment of a potential participant might have been unsuccessful including: (a) online server failure when the participant tried to access the survey; (b) the subject contacted does not check his/her university email account, (c) email address supplied was defective, (d) the email address was set to forward to another email address that was defective, (e) the message was blocked or filtered as junk mail (spam) by the recipient’s Internet or email service provider, (f) the message was sent to the recipient, but it was delivered in the junk mail box and not read, or (g) the recipient deleted the message before reading it because it was from an unknown sender or unfamiliar subject.

Research Question 1: What percentage of college students report symptoms that are consistent with the definition of PIU?

This research question was addressed through the analysis of the data generated by the Cognitive-Behavioral Checklist (CBC). Presence or absence of PIU (see Tables 1 and 2) was determined by the nine screening questions from the CBC. Two of the screener items were reverse scored to avoid response set bias. Participants that positively endorsed four or more of the screener items were categorized as PIU and subjects who endorsed three or fewer screener questions were categorized as “Non-PIU.” From the sample, 680 (93%) were categorized as Non-PIU and 51 (7%) were categorized as PIU.
Table 1

Comparison of Pathological and Non-Pathological Internet Users

<table>
<thead>
<tr>
<th>PIU Status</th>
<th>All Students (Percent)</th>
<th>Female Students (Percent)</th>
<th>Male Students (Percent)</th>
<th>Average # of Hours Online per Week</th>
<th>Average # of PIU Symptoms Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-PIU</td>
<td>680 (93.0)</td>
<td>474 (94.2)</td>
<td>205 (90.3)</td>
<td>14.72</td>
<td>.78</td>
</tr>
<tr>
<td>PIU</td>
<td>51 (7.0)</td>
<td>29 (5.8)</td>
<td>22 (9.7)</td>
<td>25.88</td>
<td>4.80</td>
</tr>
<tr>
<td>Totals</td>
<td>731(100.0)</td>
<td>503 (100.0)</td>
<td>227 (100.0)</td>
<td>15.52</td>
<td>1.06</td>
</tr>
</tbody>
</table>

In terms of gender, male students (9.7%) were almost 60% more likely than female students (5.8%) to report a sufficient number of symptoms to meet the criteria for an Impulse Control Disorder associated with their Internet use. Male and female students varied slightly in terms of hours spent online per week, with female students reporting an average of 15.13 hours and male students reporting 16.28 hours respectively. The percentage of students reporting particular symptoms of PIU also demonstrated differences along gender lines (see Table3). Male students were more likely to report symptoms of preoccupation with the Internet, tolerance, lying about Internet use, engagement in illegal online activities, and jeopardized a significant relationship. Whereas, the female students were more likely to report the PIU symptoms of
unsuccessful attempts to control Internet use, withdrawal, and Internet use to escape problems or to alter mood.

When PIU status was examined in terms of class standing, each of the four undergraduate class samples reported very similar numbers (see Table 2). The percentages of students meeting the criteria for PIU by class standing were: 6.5% for freshmen, 7% for sophomores, 7.3% for juniors, and 7.5% for seniors.

Table 2

*PIU Comparisons by Class Standing*

<table>
<thead>
<tr>
<th>Class Standing</th>
<th>Non-PIU %</th>
<th>PIU %</th>
<th>Average # of PIU Symptoms</th>
<th>Average Hours per Week Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>93.5</td>
<td>6.5</td>
<td>1.14</td>
<td>16.07</td>
</tr>
<tr>
<td>Sophomore</td>
<td>93.0</td>
<td>7.0</td>
<td>.96</td>
<td>15.10</td>
</tr>
<tr>
<td>Junior</td>
<td>92.7</td>
<td>7.3</td>
<td>1.13</td>
<td>14.69</td>
</tr>
<tr>
<td>Senior</td>
<td>92.5</td>
<td>7.5</td>
<td>1.00</td>
<td>15.54</td>
</tr>
<tr>
<td>All Students</td>
<td>93.0</td>
<td>7.0</td>
<td>1.06</td>
<td>15.52</td>
</tr>
</tbody>
</table>
The Cognitive-Behavioral Checklist assessed participants for nine symptoms of PIU including: (a) preoccupation with Internet-related activities, (b) tolerance, (c) unsuccessful attempts to control or reduce Internet use, (d) restlessness or irritability if a reduction in Internet use is attempted or required (withdrawal), (e) Internet use to escape problems or alter mood, (f) lying to conceal amount of time online or content accessed, (g) engagement in illegal activities online (not including music sharing, (h) has jeopardized a significant relationship, job, or educational opportunity, (i) guilt about time online or content accessed.

The present study found following percentages of participants reporting positive symptoms for the nine PIU screener questions (see Table 3): 9.2% preoccupation with online activities, 14.1% tolerance, 9.2% unsuccessful attempts to control or reduce Internet use, 14.9% restlessness or irritability if a reduction in Internet use is attempted or required (withdrawal), 26.0% Internet use to escape problems or alter mood, 6.3% lying to conceal amount of time online or content accessed, 18.7% engaged in illegal activities online, 1.8% jeopardized a significant relationship, job, or educational opportunity, and 6.3% guilt about time online or content accessed.

The CBC demonstrated mixed results as a consistent measure of PIU. It should be noted that Cronbach’s alpha revealed that the CBC had an alpha level of .59; this is considered a low level of reliability and may suggest that the construct measured by the CBC was multidimensional in nature. The alpha levels for the Online Cognitions Scale (OCS) subscales were .44 for loneliness/depression PIU and .67 for impulsive PIU. The OCS subscales were utilized as a supplemental measure and will be discussed further in
chapter five. Conversely, Pearson r correlational analysis of the number of PIU symptoms reported, OCS-loneliness/depression PIU, OCS-impulsive PIU, and hours per week online revealed six significant relationships (see Table 9) at the 0.01 level (2-tailed) including: (a) PIU symptoms reported and OCS-Impulsive PIU scores \( (r = .631) \), (b) PIU symptoms reported and OCS-Loneliness/Depressed PIU scores \( (r = .481) \), (c) PIU symptoms reported and hours online \( (r = .306) \), (d) OCS-Impulsive PIU scores and OCS-Loneliness/Depressed PIU scores \( (r = .513) \), (e) OCS-Impulsive PIU scores and hours online \( (r = .282) \), and (f) OCS-Loneliness/Depressed PIU scores and hours online \( (r = .319) \). These results might suggest that the CBC was at least in part a valid measure of the construct of PIU.

Some interesting patterns exist in terms of the symptoms reported. The overall percentage of the sample meeting the criteria for PIU was 7.0% while only 1.8% reported jeopardizing a significant relationship. Meanwhile, 6.3% of the sample reported that they have lied about their involvement with the Internet and 18.7% reported that they had engaged in illegal activities online. The data also showed a trend of declining hours spent online from freshmen through junior years and then a spike up again for seniors (see Table 2). Freshmen reported an average of 16.07 hours online, sophomores 15.10 hours, juniors 14.69, and 15.54 for seniors.

Students classified as pathological users versus non-pathological users differed in hours spent online per week (see Table 1). Students that tested negative for PIU reported an average of 14.70 hours per week online while students testing positive for PIU
reported an average of 25.88 hours online. Therefore, the pathological users reported spending 75.8% more time online than the non-pathological users.

The differences between the pathological (PIU) Internet users and non-pathological Internet users are evident when comparing the symptoms reported by the respective groups (see Table 3). The percentage of pathological users reporting each of the nine symptoms of PIU is much larger than the percentage of non-pathological Internet users reporting the same symptoms. Pathological Internet users reported the following symptoms: 60.8% preoccupation with online activities, 70.6% tolerance, 58.8% unsuccessful attempts to control or reduce Internet use, 74.5% withdrawal, 94.1% Internet use to escape problems or alter mood, 38.0% lying to conceal amount of time online or content accessed, 40.0% engaged in illegal activities online, 9.8% jeopardized a significant relationship, job, or educational opportunity, and 33.3% guilt about time online or content accessed. Conversely, non-pathological Internet users reported the following symptoms: 5.3% preoccupation with online activities, 9.9% tolerance, 5.5% unsuccessful attempts to control or reduce Internet use, 10.5% withdrawal, 20.9% Internet use to escape problems or alter mood, 4.0% lying to conceal amount of time online or content accessed, 17.3% engaged in illegal activities online, 1.2% jeopardized a significant relationship, job, or educational opportunity, and 4.3% guilt about time online or content accessed.

In terms of the number of symptoms reported, almost half (45.4%) of all students reported zero symptoms (see Table 5). Ninety-three percent of the sample reported three or fewer symptoms of PIU. Of the students classified as PIU, 49% reported four
symptoms, 31.4% reported five symptoms, 9.8% reported six symptoms, and the final 9.8% reported seven symptoms (see Table 6). None of the students in the PIU group reported eight or nine symptoms.
Table 3

*PIU Symptoms Reported*

<table>
<thead>
<tr>
<th>PIU Symptom</th>
<th>All Students</th>
<th>Female Students</th>
<th>Male Students</th>
<th>PIU Students</th>
<th>Non-PIU Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preoccupation</td>
<td>9.2</td>
<td>8.2</td>
<td>11.5</td>
<td>60.8</td>
<td>5.3</td>
</tr>
<tr>
<td>Tolerance</td>
<td>14.1</td>
<td>13.1</td>
<td>16.3</td>
<td>70.6</td>
<td>9.9</td>
</tr>
<tr>
<td>Unsuccessful Attempts to Reduce Internet Use</td>
<td>9.2</td>
<td>9.8</td>
<td>8.0</td>
<td>58.8</td>
<td>5.5</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>14.9</td>
<td>16.4</td>
<td>11.5</td>
<td>74.5</td>
<td>10.5</td>
</tr>
<tr>
<td>Alter Mood / Escape</td>
<td>26.0</td>
<td>26.6</td>
<td>24.9</td>
<td>94.1</td>
<td>20.9</td>
</tr>
<tr>
<td>Lied about Internet Use</td>
<td>6.3</td>
<td>3.8</td>
<td>12.0</td>
<td>38.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Illegal Activity Online</td>
<td>18.7</td>
<td>12.4</td>
<td>33.2</td>
<td>40.0</td>
<td>17.3</td>
</tr>
<tr>
<td>Jeopardized Relationship</td>
<td>1.8</td>
<td>0.6</td>
<td>4.4</td>
<td>9.8</td>
<td>1.2</td>
</tr>
<tr>
<td>Guilt about Internet Use</td>
<td>6.3</td>
<td>5.6</td>
<td>8.0</td>
<td>33.3</td>
<td>4.3</td>
</tr>
</tbody>
</table>
Table 4

*PIU Symptoms Reported by Class Standing*

<table>
<thead>
<tr>
<th>PIU Symptom</th>
<th>Freshmen</th>
<th>Sophomores</th>
<th>Juniors</th>
<th>Seniors</th>
<th>All Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preoccupation</td>
<td>6.1</td>
<td>8.2</td>
<td>13.7</td>
<td>11.6</td>
<td>9.2</td>
</tr>
<tr>
<td>Tolerance</td>
<td>12.6</td>
<td>14.5</td>
<td>15.3</td>
<td>15.0</td>
<td>14.1</td>
</tr>
<tr>
<td>Unsuccessful Attempts to Reduce Internet Use</td>
<td>12.1</td>
<td>5.8</td>
<td>12.2</td>
<td>6.4</td>
<td>9.2</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>16.4</td>
<td>10.5</td>
<td>19.7</td>
<td>14.0</td>
<td>15.0</td>
</tr>
<tr>
<td>Alter Mood / Escape</td>
<td>30.9</td>
<td>30.4</td>
<td>19.5</td>
<td>19.1</td>
<td>26.1</td>
</tr>
<tr>
<td>Lied about Internet Use</td>
<td>8.5</td>
<td>5.3</td>
<td>4.9</td>
<td>5.2</td>
<td>6.3</td>
</tr>
<tr>
<td>Illegal Activity Online</td>
<td>22.0</td>
<td>11.7</td>
<td>18.5</td>
<td>21.5</td>
<td>18.9</td>
</tr>
<tr>
<td>Jeopardized Relationship</td>
<td>1.1</td>
<td>1.2</td>
<td>4.0</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>Guilt about Internet Use</td>
<td>5.0</td>
<td>8.7</td>
<td>5.6</td>
<td>6.4</td>
<td>6.3</td>
</tr>
</tbody>
</table>
Table 5

*Number of PIU Symptoms Reported – All Students*

<table>
<thead>
<tr>
<th>Number of PIU Symptoms</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>332</td>
<td>45.4</td>
<td>45.4</td>
</tr>
<tr>
<td>1</td>
<td>206</td>
<td>28.2</td>
<td>73.6</td>
</tr>
<tr>
<td>2</td>
<td>103</td>
<td>14.1</td>
<td>87.7</td>
</tr>
<tr>
<td>3</td>
<td>39</td>
<td>5.3</td>
<td>93.0</td>
</tr>
<tr>
<td>4</td>
<td>25</td>
<td>3.4</td>
<td>96.4</td>
</tr>
<tr>
<td>5</td>
<td>16</td>
<td>2.2</td>
<td>98.6</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>.7</td>
<td>99.3</td>
</tr>
<tr>
<td>7</td>
<td>5</td>
<td>.7</td>
<td>100.0</td>
</tr>
<tr>
<td>8</td>
<td>0</td>
<td>-</td>
<td>100.0</td>
</tr>
<tr>
<td>9</td>
<td>0</td>
<td>-</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>731</td>
<td>100.0</td>
<td>-</td>
</tr>
</tbody>
</table>
Table 6

*Number of PIU Symptoms Reported by Pathological Internet Users*

<table>
<thead>
<tr>
<th>Number of Symptoms</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>25</td>
<td>49.0</td>
<td>49.0</td>
</tr>
<tr>
<td>5</td>
<td>16</td>
<td>31.4</td>
<td>80.4</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>9.8</td>
<td>90.2</td>
</tr>
<tr>
<td>7</td>
<td>5</td>
<td>9.8</td>
<td>100.0</td>
</tr>
<tr>
<td>8</td>
<td>0</td>
<td>-</td>
<td>100.0</td>
</tr>
<tr>
<td>9</td>
<td>0</td>
<td>-</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>51</td>
<td>100.0</td>
<td>-</td>
</tr>
</tbody>
</table>

*Research Question 2: Is there an interaction between gender and class standing that impacts the number of PIU symptoms reported?*

Research Question 2 was addressed through the data collected by the demographic information sheet (gender and class standing reported) and the CBC (number of symptoms reported). A 4 x 2 factorial analysis of variance incorporating class standing and gender as the factors and number of symptoms reported as the dependent variable (see Table 7). The two-way ANOVA revealed no evidence of a significant interaction between gender and class standing in terms of numbers of PIU
symptoms reported $F(3, 722) = .58, p > .05$. Using the partial eta squared as the measure of association, the interaction between gender and class standing accounted for less than 1% of the total variability in the number of PIU symptoms reported.

Harris (1998) stated that the following assumptions that must be met in order to utilize a two-way analysis of variance (ANOVA): (a) data are measured on an interval or ratio scale or measurement, (b) the scores are randomly or independently sampled, (c) the distribution of the dependent measure is normal in the populations that the data collected from, and (d) the populations share equal variances. Each of the four assumptions is met adequately in the present sample to utilize the two-way ANOVA. However, the two-way ANOVA is robust to breaches of the suppositions of normal distributions and equal variances (Harris, 1998).

*Research Question 3: Are there group differences in the number of PIU symptoms reported by students based on their class standing?*

*Research Question 3* was addressed through the data collected by the demographic information sheet (class standing reported) and the CBC (number of symptoms reported). A 4 x 2 factorial analysis of variance incorporating class standing and gender as the factors and number of symptoms reported as the dependent variable (see Table 7). The two-way ANOVA revealed did not reveal significant differences in the number of PIU symptoms based on class standing $F(3, 722) = .218, p > .05$. The number of PIU symptoms reported by each class were not significantly different (see Table 7): freshmen ($M = 1.13, SD = 1.41$), sophomores ($M = .96, SD = 1.37$), juniors ($M = 1.12, SD = 1.37$), and seniors ($M = .99, SD = 1.31$). The class groups in the present
sample also appeared to be very similar (See Table 2) in terms of percentage of students meeting the criteria for PIU (freshmen: 6.5%, sophomores: 7%, juniors: 7.3%, and seniors 7.5%) and average number of hours per week online (freshmen: 16.07, sophomores: 15.10, juniors: 14.69, and seniors: 15.54).

Table 7

Two-way ANOVA analyzing Group Differences by Class Standing and Gender

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>22.682(^a)</td>
<td>7</td>
<td>3.240</td>
<td>1.731</td>
<td>.099</td>
<td>.017</td>
</tr>
<tr>
<td>Intercept</td>
<td>720.960</td>
<td>1</td>
<td>720.960</td>
<td>385.071</td>
<td>.000</td>
<td>.348</td>
</tr>
<tr>
<td>GENDER</td>
<td>15.689</td>
<td>1</td>
<td>15.689</td>
<td>8.379</td>
<td>.004</td>
<td>.011</td>
</tr>
<tr>
<td>CLASS</td>
<td>1.226</td>
<td>3</td>
<td>.409</td>
<td>.218</td>
<td>.884</td>
<td>.001</td>
</tr>
<tr>
<td>GENDER * CLASS</td>
<td>3.237</td>
<td>3</td>
<td>1.079</td>
<td>.576</td>
<td>.631</td>
<td>.002</td>
</tr>
<tr>
<td>Error</td>
<td>1351.786</td>
<td>722</td>
<td>1.872</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2193.000</td>
<td>730</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>1374.467</td>
<td>729</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) R Squared = .017 (Adjusted R Squared = .007)
Research Question 4: Are there group differences in the number of PIU symptoms reported by students based on their gender?

Research Question 4 was addressed through the data collected by the demographic information sheet (gender reported) and the CBC (number of symptoms reported). A 4 x 2 factorial analysis of variance incorporating class standing and gender as the factors and number of symptoms reported as the dependent variable (see Table 6). The two-way ANOVA revealed significant differences in the number of PIU symptoms based on gender $F(1, 722) = 8.38, p < .05$. The numbers of PIU symptoms reported by each gender were significantly different (see Tables 6 and 7): female students ($M = .96, SD = 1.27$) and male students ($M = 1.28, SD = 1.56$).

Several other interesting gender differences were found in terms of how male and female students use the Internet. Both genders reported that instant messaging/chat were their most frequent online activities; however instant messaging/chat accounted for over half (55%) of female students’ most frequent online versus 38.3% for male students (see Table 11). The second most popular online activity for both genders was email: 31.6% for females and 26% for males. The next most popular online activity for both genders was surfing/web browsing which was reported by 13.2% of males and 5% females. The final major category where males and females differed, was in music sharing/file swapping; males were two times more likely to report music sharing/file swapping as their most frequent activity (8.8% of male versus 4% of females).

The final area explored for gender differences were the symptoms reported on the nine items of the Cognitive-Behavioral Checklist (see Table 3). Male and female
students were within three percentage points of each other on four of the nine symptoms of PIU (tolerance, unsuccessful attempts to reduce Internet use, Internet use for mood alteration/escape from problems, guilt). The five symptoms which students differed based on gender were engagement in illegal activities, restless or irritability when Internet use is reduced, lying about involvement with the Internet, and preoccupation with Internet activities. The most salient difference was found on the illegal activity item in which 32.6% of male students positively endorsed the item versus 12.2% female students.
Table 8

*Average Number of PIU Symptoms Reported by Gender and Class Standing*

<table>
<thead>
<tr>
<th>Gender</th>
<th>Class Standing</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>Freshman</td>
<td>1.0809</td>
<td>1.43232</td>
<td>173</td>
</tr>
<tr>
<td></td>
<td>Sophomore</td>
<td>.8175</td>
<td>1.07630</td>
<td>126</td>
</tr>
<tr>
<td></td>
<td>Junior</td>
<td>1.0471</td>
<td>1.29013</td>
<td>85</td>
</tr>
<tr>
<td></td>
<td>Senior</td>
<td>.8739</td>
<td>1.17570</td>
<td>119</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>.9602</td>
<td>1.26806</td>
<td>503</td>
</tr>
<tr>
<td>Male</td>
<td>Freshman</td>
<td>1.2472</td>
<td>1.36749</td>
<td>89</td>
</tr>
<tr>
<td></td>
<td>Sophomore</td>
<td>1.3478</td>
<td>1.93468</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>Junior</td>
<td>1.2821</td>
<td>1.53809</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Senior</td>
<td>1.2642</td>
<td>1.57078</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1.2775</td>
<td>1.56216</td>
<td>227</td>
</tr>
<tr>
<td>Total</td>
<td>Freshman</td>
<td>1.1374</td>
<td>1.41022</td>
<td>262</td>
</tr>
<tr>
<td></td>
<td>Sophomore</td>
<td>.9593</td>
<td>1.37376</td>
<td>172</td>
</tr>
<tr>
<td></td>
<td>Junior</td>
<td>1.1210</td>
<td>1.37097</td>
<td>124</td>
</tr>
<tr>
<td></td>
<td>Senior</td>
<td>.9942</td>
<td>1.31788</td>
<td>172</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1.0589</td>
<td>1.37310</td>
<td>730</td>
</tr>
</tbody>
</table>
Supplemental Data

The following supplemental data was collected via the demographic information sheet (Tables 9 and 11), and the subscales of the Online Cognitions Scale for loneliness/depression PIU and impulsive PIU (Table 10). The subscales of the OCS were utilized as a test of construct validity for the CBC as a measure of PIU. The implications for Table 9 are discussed under the results for Research Question 1 in this chapter.

For the supplemental impact questions, subjects were asked to respond to how their Internet use impacted the following areas of functioning: current relationships, academic success, ability to get enough sleep, and being late for or missing classes. Subjects had the following response choices: positive, negative, or neutral. All students in the sample reported negative impacts in the following areas of functioning (percentage): current relationships (1.2), academic success (7.9), ability to get enough sleep (20.7), and being late for or missing classes (14.0). The ability to get enough sleep was area of functioning most frequently negatively impacted: freshmen (25.6%), sophomores (15.7%), juniors (19.5%), and seniors (19.1%). The vast majority of student reported that the Internet had either a positive (39.9%) or neutral (58.5%) impact on their current relationships. Only 1.2% of all students reported negative impacts on their current relationships. The results showed some interesting patterns based on class standing. Generally, freshmen were the class most likely to report negative impacts on academic success (9.9%), ability to get enough sleep (25.6%), and being late for or missing classes (16.9%).
The demographic information sheet collected the online activity information which students reported as using the most frequently. For all students groups, instant messaging/chat was reported as the most popular online activity (see Table 11). Male students reported participating in online activities such as online games/MUDS, surfing/web browsing, music sharing/file swapping, and pornography. Whereas, female students were more likely to report using email, instant messaging/chat, and auctions/shopping related Internet activities most frequently.
### Table 9

**Internet Use Impact on Various Areas of Functioning**

<table>
<thead>
<tr>
<th>Area of Functioning</th>
<th>Class Standing</th>
<th>Neutral Impact %</th>
<th>Positive Impact %</th>
<th>Negative Impact %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Relationships</strong></td>
<td>Freshman</td>
<td>57.1</td>
<td>40.9</td>
<td>1.9</td>
</tr>
<tr>
<td></td>
<td>Sophomore</td>
<td>64.5</td>
<td>34.9</td>
<td>.6</td>
</tr>
<tr>
<td></td>
<td>Junior</td>
<td>54.0</td>
<td>46.0</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Senior</td>
<td>59.3</td>
<td>39.0</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>58.9</td>
<td>39.9</td>
<td>1.2</td>
</tr>
<tr>
<td><strong>Academic Success</strong></td>
<td>Freshman</td>
<td>28.6</td>
<td>61.5</td>
<td>9.9</td>
</tr>
<tr>
<td></td>
<td>Sophomore</td>
<td>35.5</td>
<td>56.2</td>
<td>8.3</td>
</tr>
<tr>
<td></td>
<td>Junior</td>
<td>28.1</td>
<td>65.8</td>
<td>6.1</td>
</tr>
<tr>
<td></td>
<td>Senior</td>
<td>25.0</td>
<td>69.5</td>
<td>5.5</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>29.3</td>
<td>62.8</td>
<td>7.9</td>
</tr>
<tr>
<td><strong>Ability to get Enough Sleep</strong></td>
<td>Freshman</td>
<td>68.7</td>
<td>5.7</td>
<td>25.6</td>
</tr>
<tr>
<td></td>
<td>Sophomore</td>
<td>77.3</td>
<td>7.0</td>
<td>15.7</td>
</tr>
<tr>
<td></td>
<td>Junior</td>
<td>76.4</td>
<td>4.1</td>
<td>19.5</td>
</tr>
<tr>
<td></td>
<td>Senior</td>
<td>72.8</td>
<td>8.1</td>
<td>19.1</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>73.0</td>
<td>6.3</td>
<td>20.7</td>
</tr>
<tr>
<td><strong>Late for or Miss Class</strong></td>
<td>Freshman</td>
<td>75.9</td>
<td>7.3</td>
<td>16.9</td>
</tr>
<tr>
<td></td>
<td>Sophomore</td>
<td>81.9</td>
<td>6.4</td>
<td>11.7</td>
</tr>
<tr>
<td></td>
<td>Junior</td>
<td>81.5</td>
<td>8.1</td>
<td>10.5</td>
</tr>
<tr>
<td></td>
<td>Senior</td>
<td>77.2</td>
<td>8.2</td>
<td>14.6</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>78.5</td>
<td>7.4</td>
<td>14.0</td>
</tr>
</tbody>
</table>
In addition to the Supplemental Impact Questions, participants completed two subscales of the Online Cognitions Scale (OCS). The subscales utilized included “Lonely/Depressed PIU” and “Impulsive PIU.” The results of Pearson r found significant positive relationships between the numbers of PIU symptoms reported on the Cognitive-Behavioral Checklist and scores for Lonely/Depressed PIU (p) and Impulsive PIU (p). These results suggest provide support for the construct validity of the Cognitive-Behavioral Checklist (see Table 10).

Table 10

Correlations of OCS-subscales, Hours Online, and PIU Symptoms

<table>
<thead>
<tr>
<th># of PIU Symptoms (CBC)</th>
<th>OCS Impulsive PIU</th>
<th>OCS Lonely/Depressed PIU</th>
<th>Hours Online per Week</th>
</tr>
</thead>
<tbody>
<tr>
<td># of PIU Symptoms (CBC)</td>
<td>1</td>
<td>.631*</td>
<td>.481*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCS Impulsive PIU</td>
<td>.631*</td>
<td>1</td>
<td>.513*</td>
</tr>
<tr>
<td>OCS Lonely-Depressed PIU</td>
<td>.481*</td>
<td>.513*</td>
<td>1</td>
</tr>
<tr>
<td>Hours Online per Week</td>
<td>.306*</td>
<td>.282*</td>
<td>.319*</td>
</tr>
</tbody>
</table>

* Pearson Correlation is significant at the 0.01 level (2-tailed).
Table 11

*Most Frequent Online Activities*

<table>
<thead>
<tr>
<th>Online Activity</th>
<th>All Students</th>
<th>Female Students</th>
<th>Male Students</th>
<th>PIU Students</th>
<th>Non-PIU Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email</td>
<td>30.0</td>
<td>31.6</td>
<td>26.0</td>
<td>15.7</td>
<td>31.0</td>
</tr>
<tr>
<td>Online games/ MUDS</td>
<td>3.4</td>
<td>2.8</td>
<td>4.8</td>
<td>5.9</td>
<td>3.2</td>
</tr>
<tr>
<td>Instant Messaging/ Chat</td>
<td>50.0</td>
<td>55.0</td>
<td>38.3</td>
<td>53.0</td>
<td>49.3</td>
</tr>
<tr>
<td>Auctions/shopping</td>
<td>1.4</td>
<td>1.6</td>
<td>.9</td>
<td>2.0</td>
<td>1.3</td>
</tr>
<tr>
<td>Surfing/web browsing</td>
<td>7.5</td>
<td>5.0</td>
<td>13.2</td>
<td>13.7</td>
<td>7.1</td>
</tr>
<tr>
<td>Online Gambling</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Music sharing/file swapping</td>
<td>5.5</td>
<td>4.0</td>
<td>8.8</td>
<td>2.0</td>
<td>5.7</td>
</tr>
<tr>
<td>Pornography</td>
<td>1.1</td>
<td>-</td>
<td>3.5</td>
<td>5.9</td>
<td>.01</td>
</tr>
<tr>
<td>Other</td>
<td>1.6</td>
<td>.4</td>
<td>4.4</td>
<td>2.0</td>
<td>1.6</td>
</tr>
</tbody>
</table>
CHAPTER FIVE:
SUMMARY AND CONCLUSIONS

Summary of the Study

The present study was designed to examine the prevalence of Pathological Internet Use (PIU) and its associated problems in the college student population. The purpose of the study was to extend the prior research and to help clarify a clinical definition of PIU. Whether or not individuals can become psychologically dependent on the Internet is still an unanswered question. However, the research clearly indicates that some individuals are experiencing negative consequences from their time spent online (Anderson, 2001; Brenner, 1997; Caplan, 2002; Morahan-Martin & Schumacher, 2000).

Despite the lack of agreement among various studies and operational definitions of PIU, most operational definitions of the disorder could meet the established criteria for an Impulse-Control Disorder Not Otherwise Specified based on current DSM-IV criteria. The essential trait of an Impulse Control Disorder is the inability to control an urge to perform an act that is harmful to the individual or others (DSM-IV). The following nine criteria were utilized in the present study and have been consistently supported in the literature (Anderson, 2001; Davis, Flett, & Besser, 2002; Morahan-Martin & Schumacher, 2000; Young, 1998) and are consistent with DSM-IV criteria for a person suffering from an Impulse Control Disorder due to PIU: (a) preoccupation with the Internet or Internet related activities, (b) a need to spend increasing amounts of time online in order to achieve desired excitement, (c) has made repeated attempts to control, reduce, or stop Internet use, (d) becomes restless or irritable when attempting to cut
down or stop Internet use (withdrawal), (e) Internet is used to escape problems or as a means of relieving dysphoric mood (e.g., helplessness, guilt, anxiety, depression), (f) lies to family members, significant others, employers, or therapist to conceal extent of involvement with the Internet, (g) has committed illegal acts online (e.g., hacking into computer networks, copying files illegally, downloading illegal content), (h) has jeopardized or lost a significant relationship, job, or educational opportunity because of involvement with the Internet, and (i) feelings of guilt about the amount of time spent online and/or guilt related to the activities engaged in online.

Positive endorsement of four or more of the nine prior symptoms was classified as PIU. Subjects reporting three or fewer symptoms of an Impulse Control Disorder related to their Internet use will be categorized as non-Pathological Internet Use. Prior research has used a range of cut-off scores including: Anderson (2001): three or more, Brenner (1997): five or more, Greenfield (1999): five or more, Morahan-Martin and Schumacher (2000): four or more, Scherer (1997): three or more, Wang (2001): four or more, and Young (1998): five or more symptoms required for a designation of PIU. For the present study, the presence (self-report) of four symptoms (or more) was utilized as the cut-off score due to the assumption that this number of symptoms or greater reported would rise to a level of pathology that would be of clinical significance.

The present study focused upon the assessment of self-reported cognitions and behaviors related to Internet use in a sample of the college student population. Previous research has often used samples that are not sufficiently diverse in terms of representing both normal and pathological Internet users due to the sampling methods that recruited
from sources that would most likely yield significant results (Brenner, 1997; Young, 1996) or samples that were too small (Armstrong, Phillips, & Saling, 2000). The present study sought to place additional emphasis upon the cognitions involved in PIU. The assumption being that persons using the Internet in a pathological manner think differently than healthy Internet users and will therefore report significantly different thoughts about their time online (Davis, 2001b) and online behaviors than non-pathological Internet users. Additionally, the present study sought to explore potential correlates of PIU and group differences among college student Internet users. A college student sample was utilized due to the possibility that the overall college student population might be at greater risk for developing PIU than the general population (Kandell, 1998). The findings of this study may be useful to professionals in various educational and mental health settings.

Advantages and Challenges of Online Research

Advantages of Online Research

Previous research (Sax, Gillmartin, & Bryant, 2003; Schaefer & Dillman, 1998; Stewart, 2003) has suggested some advantages including: (a) Questionnaires administered over the Internet tend to be cheaper to produce than traditional paper and phone surveys. (b) Large populations can be reached on the Internet. (c) Response rates online tend to be faster than traditional methods. (d) Data processing is simpler and more accurate by enabling the researcher to download data directly into statistical analysis software reducing human error in data entry and the need to interpret participants’ handwriting is eliminated.
Each of the advantages cited above was found to be true in the present study. The online research tool utilized was used free of charge; the online survey tool was provided by the host institution. The online survey effectively eliminated most expenses for copying and mailing of research materials. Over 780 completed surveys were collected which suggests a relatively large population or sample can be reached easily. The sample for the study was obtained online in approximately three weeks making the online survey method very time efficient. Finally, the data processing for the present study was very simple because all survey data was downloaded into a spreadsheet program that was easily exported to a statistical analysis program.

Challenges of Online Research

An exact response rate could not be calculated due to the online data collection method employed. The online research tool employed and online survey method produced several unanticipated challenges and limitations to the present study. Approximately, 3,440 email recruiting messages were sent to email addresses that were randomly generated by the host institution (students were also recruited by flyers posted in university-owned housing). Although it can be assumed that some potential participants declined to participate when they accessed the survey online, there are several other reasons the recruitment of a potential participant might have been unsuccessful including: (a) online server failure when the participant tried to access the survey; (b) the subject contacted does not check his/her university email account, (c) email address supplied was defective, (d) the email address was set to forward to another email address that was defective, (e) the message was blocked or filtered as junk mail.
(spam) by the recipient’s Internet or email service provider, (f) the message was sent to the recipient, but it was delivered in the junk mail box and not read, or (g) the recipient deleted the message before reading it because it was from an unknown sender or unfamiliar subject. For these reasons, an exact response rate could not be calculated. Sax, Gilmartin, and Bryant (2003) recently noted similar limitations of online research that may be especially true for college student population.

The online survey tool utilized had several impacts on the present study. First, the appearance of the survey had to be altered in order fit within the parameters allowed by the survey tool (See Appendices C, D, E, & I). The survey tool limited the number of questions that could be included in the survey the resulted the elimination of two subscales of the OCS. The survey tool also only allowed one area for giving directions that resulted in the need to merge all potions (demographic information sheet, CBC, and subscales of the OCS) of the survey into one continuous survey without directions for individual sections. When all survey items were loaded, the survey tool separated the questions into two columns that may have confused some participants.

The online survey tool also experienced occasional technical problems where the computer server that hosted the survey would go offline that made the online survey inaccessible at times. It can be surmised that most potential subjects that attempted to access the survey at times when it was down did not attempt to participate again in the future. A final limitation of the online survey tool was the length of the web address required to access the survey. The address to access the online survey was:

This long address caused two major problems: (a) it was so long that it probably rendered the recruiting flyers useless in that most students would not be likely to take the time to manually type such a long address even though it was provided on tear off sheets on the flyers; (b) the address so long that it would break across (wrap) two lines in some email programs causing the hyperlink to the web survey to malfunction. The email-recruiting message did include instructions for cutting and pasting the address to make it work properly (see Appendix K), but it is probably safe to assume that some potential participants were lost to this technological challenge.

**Recommendations for Future Online Research**

Despite the challenges presented by utilizing a relatively new research methodology, the benefits appear to outweigh the shortcomings of this research model. Assuming this model is employed with populations that are reasonably Internet savvy (Sax, Gilmartin, & Bryant, 2003; Schaefer, 1998) and that the researcher is provided with access to an adequate number of valid email addresses, online research can be a very viable research method. The following recommendations are based on experiences of the researcher during the present study.

(a) Make sure you have access to adequate number of valid email address; more is always better.

(b) Pre-test your online research tool; you need to be sure that survey will do what you want it to do when potential participants access it on the Internet. Check that your questions and content will appear the way you want them online. Have others view the online survey to determine potential reactions to the
appearance, content, and length of the survey. Load trail data into the survey, by taking mock surveys yourself (or have others help you take mock surveys) to create mock data. The mock surveys will help determine if your survey will collect data properly.

(c) Make sure you have a person in technical support that can help you if problems arise while developing your survey and when the survey is published on the Internet.

(d) Include an email address where participants can contact the researcher with questions or concerns; potential participants will often alert you to technical problems with your survey. If potential subjects cannot access your survey easily, they will not participate.

(e) Monitor your incoming data and the survey itself. The flow of the data will let you know when you are approaching your minimum sample size and suggest how to proceed with recruiting efforts. You should check to make sure the online survey is operational in two ways: (1) Type the web address of the survey into your web browser to make sure that potential participants can view your survey. (2) Once you access the survey online, enter some mock data that you can easily identify as fake data into the survey (you will delete this data at a later time). This exercise lets you know that the survey is collecting data. Just because the survey appears when its web address is typed into a browser, does not necessarily mean that it is functioning and collecting data properly.
(f) Be very careful about sending large numbers of recruiting messages out at any one time. Even if you have permission from an institution to contact its members, you can have problems if members of that institution have their email forwarded to other email service providers such as AOL, Earthlink, or Hotmail (which is highly likely in the college setting). Many of these email service providers consider any unsolicited bulk email to be spam or junk mail. Your message could potentially be filtered as spam or junk and deliver a junk mail folder (where it most likely won’t be read) or it might simply be deleted without the potential participant ever knowing the message was sent. An additional danger in sending too many email recruiting messages at one time is that if enough people file complaints about your particular message you may find your email address blocked by a major Internet service provider. Being blocked by a major Internet service provider can severely limit your ability to recruit participants and it may render your email account virtually worthless. Therefore, it is recommended that recruiting emails be sent out to nine or fewer email addresses in each email message. It is also recommended that the email recruiting be spread out over a period of several days.
Conclusions

The conclusions in this section are presented in order of the research questions.

Research Question 1: What percentage of College Students report symptoms that are consistent with the definition of PIU?

A small portion of the sample reported Internet use that met the criteria for PIU. From the sample, 680 (93%) were categorized as Negative for PIU and 51 (7%) were categorized as “Positive for PIU.” Participants that positively endorsed four or more of the screener items were categorized as “Positive for PIU” and subjects who endorsed three or fewer screener questions were categorized as “Negative for PIU.” The prevalence rates for pathological use are slightly lower, but consistent with previous with studies of the college student population (Anderson, 2001 = 9.8%, Egger and Rauterberg, 1996 = 10%, Greenfield, 2000 = 6%, Kubey & Lavin, 2001= 9%, Scherer, 1997 = 13%, and Welsh = 9%).

PIU status (positive versus negative for PIU) was determined by scores on the Cognitive-Behavioral Checklist (CBC). The CBC demonstrated mixed results as a consistent measure of PIU. It should be noted that Cronbach’s alpha revealed that the CBC had an alpha level of .59; this is considered a low level of reliability and may suggest that the construct measured by the CBC was multidimensional in nature. The alpha levels for the Online Cognitions Scale (OCS) subscales were .44 for loneliness/depression PIU and .67 for impulsive PIU. The OCS subscales were utilized as a supplemental measure and will be discussed further in this chapter.
Conversely, a Pearson $r$ correlational analysis of the number of PIU symptoms reported, OCS-loneliness/depression PIU, OCS-impulsive PIU, and hours per week online revealed six significant relationships (see Table 10) at the 0.01 level (2-tailed) including: (a) PIU symptoms reported and OCS-Impulsive PIU scores ($r = .631$), (b) PIU symptoms reported and OCS-Loneliness/Depressed PIU scores ($r = .481$), (c) PIU symptoms reported and hours online ($r = .306$), (d) OCS-Impulsive PIU scores and OCS-Loneliness/Depressed PIU scores ($r = .513$), (e) OCS-Impulsive PIU scores and hours online ($r = .282$), and (f) OCS-Loneliness/Depressed PIU scores and hours online ($r = .319$). These results might suggest that the CBC was at least in part a valid measure of the construct of PIU. The subscales of OCS have been supported in the research (Davis, Flett, & Besser, 2002) as measures of PIU and are associated with established measures of depression (Radloff, 1977), loneliness (Russell, Peplau, & Cutrona, 1980), and diminished impulse control (Corchoran, & Fischer, 2000); all of which have been supported as dimensions of PIU (Morahan-Martin & Schumacher, 2000; Caplan, 2002; Davis, et al., 2002).

Higher levels of Internet use have consistently been associated with reports of PIU (Anderson, 2001; Davis, et al., 1999; Morahan-Martin & Schumacher, 2000; Young, 1998). It should be noted that higher reports of Internet use do not necessarily translate into problematic use, however there is support for a positive relationship. As noted above, the present study found significant positive correlation between PIU symptoms reported and hours online. The number of hours online per week reported by
Pathological Users was $M = 25.88$ and $M = 14.72$ for Non-Pathological Users. The overall average for the sample was 15.52 hours per week online.

The prevalence rate of the present study and prior research may not represent the true percentage of students that are experiencing problems related to their Internet use. As noted by Davis (2001b), attempts to diagnose PIU are complicated by the respondents desire to comply with perceived social norms and possibly under-reported Internet behaviors that are socially desirable. Another factor to consider is the lack of agreed upon number of symptoms sufficient for a diagnosis of pathological use (Anderson, 2001: 3 or more symptoms required for PIU; Brenner, 1997: 5 or more; Morahan-Martin & Schumacher: 4 or more; Young, 1998: 5 or more).

The cut-off score of four symptoms for PIU status was selected for the present study as a level at which problems experienced by the student would likely rise to a level of clinical significance in one or more areas of life functioning (school, work, personal relationships, physical health). Since certain items might be under-reported, it seems conceivable that many students could be experiencing PIU with fewer than four self-reported symptoms. Consider that if the cut-off score of three is employed, the percentage of students considered positive for PIU would be 12.3% of the sample; this result might be more consistent with prior studies and more in line with positive endorsements of certain symptoms (see Table 3) such as Preoccupation (percentage of symptoms positively endorsed = 9.2%), Tolerance (14.1%), Unsuccessful Attempts to Reduce Internet Use (9.2%), Withdrawal (14.9%), Escape/Mood Alteration (26%), and Illegal Activities Online (18.7%). Furthermore, it seems reasonable that some subjects
may be experiencing problems worthy of clinical attention with only three symptoms of PIU.

However, these results also highlight a shortcoming of the Cognitive-Behavioral Checklist (CBC). While the CBC did measure the number of symptoms of PIU reported by an individual, the CBC was not designed to measure the severity of symptoms or problems caused by problematic Internet use (Davis, et al., 2002). New multidimensional assessments of PIU such as Caplan’s (2002) Generalized Pathological Internet Use Scale and Davis, Flett, and Besser’s (2002) Online Cognitions Scale (full scale – two subscales were utilized in the present study) may possess greater potential for detecting both the presence and severity of PIU symptoms.

On the contrary, very low endorsements of certain items seem to confound the higher reports of certain seemingly related symptoms. For example, low positive endorsements were observed on the screening items (see Table 3) for Lying to Conceal Internet Use (6.3%), Guilt (6.3%), and Having Jeopardized a Significant Relationship (1.8%). The supplemental question asking participants to rate how their Internet use impacted their relationships found only 1.3% of students stating that their Internet use had impacted their relationships negatively (Neutral Impact: 58.9%; Positive Impact: 39.9).

Of particular interest was the screening question which stated, “I have NOT* committed an illegal act online (examples: hacking into computer networks, copying files illegally, downloading illegal content) *Do not include sharing or swapping of music files.” What makes this item stand out is the fact that almost one in five students (18.7%)
agreed that they had engaged in illegal activities online. This high endorsement rate was observed despite instructions for participants to exclude online music sharing, and file swapping which are illegal, yet very common among the college students (Jones, 2002). Participants were asked to exclude music sharing and file swapping from consideration from this question in order to avoid skewing the results in the direction of pathology because many students still do not view these types of activity as illegal. Jones (2002) found that 60% of college students have downloaded music files. Therefore, it seems one of two possibilities exist: 1) Participants may have been confused by the wording of the item (it was reverse scored meaning that the student had to disagree with the statement for it to be counted as a positive symptom). 2) A significant percentage of the college student population has knowingly engaged in activities that they themselves consider illegal. The high endorsement of this item does not appear to be consistent with the low endorsements of other items such as Jeopardizing Significant Relationships (1.8%), Lying about Ones Involvement with the Internet (6.3%), and Guilt about Ones Internet Use (6.3%). This reported illegal activity should be explored further to determine exactly what types of illegal activities students are engaging in to ascertain the seriousness of the issue.

The results of the question examining Internet use for the purpose of escape or mood alteration stated, “I often use the Internet as a way to escape my problems or to change my mood (example: feelings of depression, loneliness, guilt, or anxiety)”. The percentage of students that positively endorsed this item (26%) was the highest for all of the nine screening items on the CBC (see Tables 3 and 4). Internet use to escape ones
problems or change a bad mood could be debated as both positive and negative. It could be argued that Internet use could be a positive and healthy way of coping with a negative situation or feelings. Since the Internet is interactive and viewed as a social outlet by some users (Jones, 2002), the Internet may have advantages over other coping mechanisms such as drugs, alcohol, or high-risk sexual behavior that college students have been known to utilize. However, on the negative side, problematic Internet use may only serve as a diversion or distraction from the individual effectively dealing with the causes of his or her distress.

Results from three of the four supplemental questions (see Table 8) might suggest that 7% could be too low of an estimate of students experiencing problems related to their Internet use. Participants were asked questions to assess how their Internet use impacted the following areas of functioning: (a) current relationships, (b) academic success, (c) ability to get enough sleep, and (d) being late for or missing classes. Only 1.2% of all students reported that their Internet use had negatively impacted their current relationships. In terms of Academic Success, 62.8% of students rated their Internet use as having a positive impact, while 29.3% stated a neutral response, and 7.9% stated that their Internet use had a negative impact.

Despite relatively few reports of negative impacts on academic success, almost one in five (20.7%) students reported that their Internet use had a negative impact on their ability to get enough sleep (Neutral 73%, Positive 6.3%). More than one in ten students reported (14%) that their Internet use had negatively impacted them in terms of being late for or missing classes (Neutral 78.5%, Positive 7.4%). The obvious disconnect here is
that both the ability to get enough sleep and attending classes are generally associated with academic success (Kelly, Kelly, & Clanton, 2001). Kubey, Lavin, and Barrows (2001) found similar results associating heavier Internet use with academic impairment, staying up late, tiredness, and missing classes.

The number hours online reported by students is a final aspect of student Internet use that merits further exploration. Prior research has attempted to separate hours online for different purposes such as recreation, work, and school (Anderson, 2001; Armstrong, et al., 2000; Davis, et al., 1999; Kubey, et al., 2001; Young, 1998). The present study made no attempt to discriminate between different purposes of online time for hours reported due to the ability (and high probability) that most college Internet users multitask or move back and forth between online activities for school, work, and recreation quite frequently. For example, a student may have one window open for Instant Messaging (IM/chat), one window checking for new e-mails, and yet another using a web browser to do research for a paper. Essentially, the student has the ability to be online for multiple purposes simultaneously, therefore rendering a self-report of time online for specific reasons relatively meaningless. Consequently, the present study asked only that students report the average number of hours they spend online per week.

Research Question 2: Is there an interaction between gender and class standing that impacts the number of PIU symptoms reported?

Research Question 2 was addressed through the data collected by the demographic information sheet (class standing reported and gender) and the CBC (number of symptoms reported). Research Question 2 was assessed with a 4 x 2 two-way
analysis of variance (ANOVA). As predicted, the present study found that there is not a significant interaction between gender and class standing that impacts the number of PIU symptoms reported. A two-way ANOVA (see Table 7) revealed no evidence of a significant interaction between gender and class standing in terms of numbers of PIU symptoms reported $F(3, 722) = .58, p > .05$. Differences in PIU incidence based on gender found by prior studies (Anderson, 2001; Kubey, et al., 2001; Morahan-Martin & Schumacher, 2000).

**Research Question 3: Are there group differences in students that meet the criteria for; PIU based on class standing?**

Research Question 3 was addressed through the data collected by the demographic information sheet (class standing reported) and the CBC (number of symptoms reported). A 4 x 2 factorial ANOVA incorporating class standing and gender as the factors and number of symptoms reported as the dependent variable (see Table 7). The two-way ANOVA did not reveal significant differences in the number of PIU symptoms based on class standing $F(3, 722) = .218, p > .05$. The number of PIU symptoms reported by each class were not significantly different (see Table 7): freshmen ($M = 1.13, SD = 1.41$), sophomores ($M = .96, SD = 1.37$), juniors ($M = 1.12, SD = 1.37$), and seniors ($M = .99, SD = 1.31$). The class groups in the present sample also appeared to be very similar (See Table 2) in terms of percentage of students meeting the criteria for PIU (freshmen: 6.5%, sophomores: 7%, juniors: 7.3%, and seniors 7.5%) and average number of hours per week online (freshmen: 16.07, sophomores: 15.10, juniors: 14.69, and seniors: 15.54).
Before the present study, previous PIU research had not addressed if students at different stages of their undergraduate education might look different in terms of symptoms and prevalence rates. Student development theory has suggested that students face different development tasks during each successive year in college (Chickering & Reisser, 1993; Creamer, 1980; Kandell, 1998). It was hypothesized that these developmental issues may impact how students use the Internet during differently depending on their class standing. Furthermore, the present study predicted that freshmen students would report significantly more symptoms of PIU, however the initial data analysis of symptoms reported did not support this assumption. It was assumed from a developmental perspective, that first year students might be more likely to have extra free time and be more likely to engage in risk taking behaviors as has been observed with other behaviors such binge drinking (Werch, Pappas, Carlson, DiClemente, Chally, & Sinder, 2000) and higher risk sexual behaviors (Smith & Brown, 1998).

The findings about class standing may suggest that PIU is a more complex phenomenon than comparisons of class groups can provide. Although there may be developmental forces and issues (Hall & Parsons, 2001; Kandell, 1998) that contribute to students developing an impulse control disorder related to their Internet use, the assessment tools (Cognitive-Behavioral Checklist, and OCS subscales for loneliness/depression and impulsivity) utilized in the present study were not able to find statistically significant evidence of these relationships. College students’ Internet use is probably a positive factor (See Table 8) for most students as suggested by the high percentages that stated that their Internet use has had either a positive or neutral impact.
on their current relationships (positive impact = 39.9%, neutral impact = 58.9%) and academic success (positive impact = 62.8%, neutral impact = 29.3%).

Although no statistically significant relationships were discovered between class standing and PIU symptoms reported, there was an interesting trend in terms of number of hours spent online. As expected, freshman students reported the highest average number of hour per week online (M = 16.07), while reductions in hours online were observed for sophomores (M = 15.10) and juniors (M = 14.69). However, seniors in the study reported an unexpected increase in hours per week online (M = 15.54). These small fluctuations in time spent online may be explained by developmental issues during each year of school, however there are most likely multiple factors involved that are related to amount of time a student ultimately spends online. For example, freshmen may be spending more time online in order to maintain relationships from high school or home. The time online is gradually reduced during sophomore and junior years as these relationships are replaced. Online time may begin to spike upward again as seniors begin to engage in a job search or start to make plans for graduate school. These patterns are just one possibility and should be examined further.

Analyzing the supplemental Internet impact questions revealed other potentially relevant findings in terms of class differences (see Table 8). The main finding of this analysis suggested that younger students, especially freshmen, are more likely to report negative impacts from their Internet use. For example, when asked how the Internet impacts their academic success, freshmen were most likely to report that their Internet use negatively impacted the academic success (Negative Impact on Academic Success
Reported: freshmen = 9.9%, sophomores = 8.3%, juniors = 6.1%, seniors = 5.5%).

Freshmen students also were the class most likely to report negative impacts on being late for or missing classes (Negative Impact on Being Late / Missing Classes Reported: freshmen = 16.9%, sophomores = 11.7%, juniors = 10.5%, seniors = 14.6%). The negative impact that could be most salient for freshman and possibly all students was the data that revealed 25.6% of freshmen reporting negative impacts on their ability to get enough sleep (Negative Impact on Getting Enough Sleep Reported: sophomores = 15.7%, juniors = 19.5%, seniors = 19.1%). Together each of these Internet impact results suggest that the Internet use of first-year college students may have more problematic effects than upperclassmen. These class differences may warrant additional research focusing on first-year students and may be worthy of attention of higher education personnel such as counselors and resident assistants when working with first-year students. These class differences may also highlight another developmental phenomenon in that the freshmen class represents a group of students that was most likely introduced to computers and the Internet at a very young age (Jones, 2002). The upperclassmen, while very similar to the freshmen class could have fewer members that have utilized the Internet as extensively as the average freshman Internet user in the present sample. This difference of a few years can be very significant in that the Internet has evolved in many ways during the last three to five years.

A final question that generated some noteworthy data was the Cognitive-Behavioral Checklist item that screened for Internet use for the purpose of mood alteration or escape from problems. The analysis of this item showed that freshmen
students (30.9%) were most likely to report Internet use for the mood alteration or escape problems; sophomores followed closely at 30.4%. The numbers of seniors (19.1%) and juniors (19.5%) reporting Internet use for mood alteration was over 10% lower than the underclassmen. As noted previously, even though using the Internet to change one’s mood is not necessarily negative (it may actually be adaptive), these results imply that students at different stages of their education (and possibly maturity) are using the Internet for different reasons. Finally, these results suggest the presence of another variable, an individual’s preference for online versus in-person communications, which was not directly measured in the present study (Young, 1998). A recent study by Caplan (2002) suggested that there are two new factors that might help to predict problematic Internet use: “Social Benefits” and “Social Control.” Social benefits relate to the perception of the Internet user that there are social benefits to communicating online versus offline. Social control refers to a belief by the Internet user that she/he has more control over social situations when communicating online. Exploration of variables such as social benefits and social control might help to better explain differences among students’ self-reports of PIU-related issues.

The small differences between classes in terms of hours online and symptoms reported also add support the premise that time spent online only is one dimension of a person’s Internet use (Grohol, 1999). Why a person goes online, the cognitions the user has about their online experience, the outcomes experienced as a result of being online are all likely contributors to the development of PIU (Caplan, 2002; Davis, 2000; Davis, Flett, & Besser, 2002). These considerations add further support for the supposition that
PIU might actually be a multidimensional phenomenon (Caplan, 2002; Davis, Flett, & Besser, 2002).

Research Question 4: Are there group differences in students that meet the criteria for PIU based on gender?

Research Question 4 was addressed through the data collected by the demographic information sheet (gender reported) and the CBC (number of symptoms reported). A 4 x 2 factorial ANOVA incorporating class standing and gender as the factors and number of symptoms reported as the dependent variable (see Table 6). The two-way ANOVA revealed significant differences in the number of PIU symptoms based on gender $F(1, 722) = 8.38, p < .05$. The numbers of PIU symptoms reported by each gender were significantly different (see Tables 6 and 7): female students ($M = .96, SD = 1.27$) and male students ($M = 1.28, SD = 1.56$). The gender differences found in this sample have been demonstrated in previous studies (Anderson, 2001; Kubey, et al., 2001; Morahan-Martin & Schumacher, 2000).

These gender differences could be considered somewhat surprising given that women now actually outnumber men online in the United States (Nielsen Net Ratings, 2003). Neilsen NetRatings (2003) has also found that as of 2001, the number of women online actually mirrors their numbers in the United States population that is approximately 51.7%. However, what these numbers do not show is if men and women differ in how or why they use the Internet. It might be reasonable to assume that men and women would be essentially the same in terms of how they use the Internet and how many symptoms of PIU they report as a group.
The results could also suggest that males use the Internet in different ways, for different purposes, or that they are more likely to utilize functions of the Internet that are more prone to abuse such as: online games and pornography (see Table 11). Nielson NetRatings (2003) has found that males tend to go online more often (20 times per month), spend more time (10 hours and 24 minutes), online, and view more web pages (760) than women. Conversely, women averaged 18 online sessions per month, almost nine hours online per month, and viewed 580 web pages (Nielson NetRatings, 2003). Furthermore, Nielsen NetRatings (2003) has suggested that differences between male and female Internet users can largely be attributed to popularity of pornographic web sites among male Internet users.

The present study found only 3.5% of males reporting that accessing pornography was their most frequent activity online versus zero females (see Table 11). The results probably indicate: (a) the utilization of the Internet to access pornographic web sites by male students was most likely underreported, (b) it may be more important to find out why a person is accessing a particular type of content than it is to simply record the type of content. In other words, what are the user’s thoughts associated with the user’s online behaviors (Davis, 2000) and what types of needs is the user attempting to meet by doing certain activities online? Future research may be improved by asking participants to report all of the different types of activities they engage in online and by exploring the reasons that people access particular types of Internet content.

In addition to differences in accessing pornographic material, several other interesting gender differences were found in terms of how male and female students use
the Internet. Both genders reported that instant messaging/chat were their most frequent online activities; however instant messaging/chat accounted for over half (55%) of female students’ most frequent online versus 38.3% for male students (see Table 11). The second most popular online activity for both genders was email: 31.6% for females and 26% for males. The next most popular online activity for both genders was surfing/web browsing which was reported by 13.2% of males and 5% females. The final major category where males and females differed, was in music sharing/file swapping; males were two times more likely to report music sharing/file swapping as their most frequent activity (8.8% of male versus 4% of females). What makes this last finding of some interest is that much of the music sharing and file swapping that students get involved in is illegal. Additionally, the report by the sample that may warrant further investigation is the screening question which revealed almost one in five students (18.7%) reporting engagement in illegal activities online (see Table 3).

The final area explored for gender differences were the symptoms reported on the nine items of the Cognitive-Behavioral Checklist (see Table 3). Male and female students were within three percentage points of each other on four of the nine symptoms of PIU (tolerance, unsuccessful attempts to reduce Internet use, Internet use for mood alteration/escape from problems, guilt). The five symptoms which students differed based on gender were engagement in illegal activities, restless or irritability when Internet use is reduced, lying about involvement with the Internet, and preoccupation with Internet activities. The most salient difference was found on the illegal activity item in which 32.6% of male students positively endorsed the item versus 12.2% female
students. This item alone should raise concerns for college administrators and parents of college students. If these results were found to be consistent among multiple college settings or campuses, there might be a major problem. This would mean that one in three male and one in ten female college students are knowingly committing illegal acts online.

Moreover, these findings regarding illegal activities are compounded by the fact they are very likely lower than the reality on this particular campus since participants were instructed to exclude music sharing and file swapping from their consideration. Recently, the Recording Industry Association of America (RIAA) filed lawsuits against over 260 music swappers and several colleges have begun developing policies addressing illegal sharing of copyrighted materials over the Internet (Harmon, 2003; Lubell, 2003). In fact some universities are using sophisticated software to monitor and control what students can do online in order to protect the universities from legal action (Lubell, 2003). At minimum, this particular aspect of college student Internet use warrants further study to determine if these results generalize across the population and further examine exactly what types of illegal activities tend to involve college students.

**Recommendations for Counseling and Higher Education**

The present study’s findings suggest several issues for counselors and college student personnel to be aware of when working with college students. For counselors, the finding of a relationship between PIU symptoms and loneliness, depression, and impulsivity might impact how counselors conduct their intake interviews with college students. The relationship between PIU symptoms and depression has been supported consistently in the literature (Caplan, 2002; Davis, Flett, & Besser, 2002; Shapira, et al.,
2000; Young & Rogers, 1998). PIU’s relationship to other disorders has not been extensively researched.

Whether, or not PIU is the cause or effect of pre-existing mental health issues have not yet been determined. Either scenario seems realistically possible as noted by Davis’ (2001a) Model of Pathological Internet Use (see Figure 1). Therefore, PIU could cause or exacerbate a student’s mental health issues. If counselors are not investigating how a student uses the Internet net, they are missing a vital piece of information for understanding how the student spends a significant amount of her/his time; 15.52 hours per week on average (25.88 hours for pathological users). A student’s Internet use can also tell the counselor a lot of information about how she/he communicates with others, what she/he finds interesting, and possibly what needs the student might be trying to meet online (in a healthy or unhealthy manner).

For college student personnel administrators, an increased awareness of PIU might be beneficial in terms of training and awareness. Professionals in higher education should be trained by the college’s health or counseling center to recognize symptoms of PIU. The place where colleges may have the greatest opportunity to help their students is when they are actually living on campus in university owned housing. The university has more control and influence over the student’s behaviors and experiences on campus than with off-campus housing. Professionals and paraprofessionals (resident assistants) in the residence halls should be trained to look for signs of PIU such.

Professors and other instructors might also benefit from a heighten awareness of PIU due to the amount of time and interaction (both in class and outside of classes) these
individuals often have with students (this is of course dependent upon the size of classes and amount of interaction between the instructor and student). In fact, a lot of student faculty interaction now takes place online (Jones, 2002). Early recognition of PIU could help in referring students to appropriate campus services such as counseling, career services, health education, or religious organizations depending on the nature of the problem. Ultimately, this early intervention could lead to healthier students and better student retention.

**Summary and Recommendations for Future Research**

Overall, the present study found results that were consistent with previous studies of PIU in the college student population (Anderson, 2001; Armstrong, Phillips, & Saling, 2000; Kubey, Lavin, & Barrows, 2001; Morahan-Martin & Schumacher, 1997). Four main findings resulted from the present study. (a) A small number of college students (7% in the present study) are reporting cognitions, behaviors, and negative outcomes that have been consistently cited as symptoms of PIU (Anderson, 2001; Caplan, 2002; Davis, 2001a; Morahan-Martin & Schumacher, 1997; Young & Rogers, 1998). (b) Male and female students appear to use the Internet differently. Male students reported significantly more symptoms of PIU, spent more time online, and tended to engage in activities more commonly associated with problematic use. Significant differences based on gender were found by the present study, and have been found in prior studies (Anderson, 2001; Kubey, et al., 2001; Morahan-Martin & Schumacher, 1997). (c) Although there were not statistically significant differences in terms of symptoms reported on class standing, there are practical differences that emerged and suggested that
first-year students are more likely to experience problems as associated with their Internet use. Class differences may be the focus of new research since the prior research generally has not made comparisons with regard to class standing (see Table 9). (d) The present results suggest that there is merit in further research of pathological Internet use. The information generated by the present study and future research should be useful to college mental health counselors, residence life personnel, college instructors, and others concerned with the welfare of college students. Further, research could be beneficial in several aspects of Internet use that have not been explored, but will be detailed in this final section.

Research has not yet presented an empirically valid cut-off score to determine the point at which symptoms reported should be considered significant enough to require clinical attention. The present study and prior research have suggested that PIU is a multidimensional phenomenon (Caplan, 2002; Davis, 2001a, Davis, Flett, & Besser, 2002, Wang, 2001) as opposed to being a mental health issue that can be identified by a simple symptom checklist. A checklist can show that a person is having problems related to their Internet use. But, a checklist cannot completely explain why the person is having these problems or which aspects of their Internet use are pathological. This finding leads to the next logical step in the further research of PIU which highlights the need for an assessment of PIU which fully accounts for the various dimensions of PIU including cognitions, behaviors, and negative outcomes. Furthermore, future PIU assessments should include not only checklists for presence or absence of symptoms, but also a means
for measuring the degree and/or severity of problems, behaviors, and cognitions associated with PIU.

The Generalized Problematic Internet Use Scale (Caplan, 2002) and the Online Cognitions Scale – full scale (Davis, Flett, and Besser, 2002) have offered the best potential for providing an empirically sound measure of PIU. However, each of these assessments are lacking in three areas: (a) neither of these scales provides cut-off scores or guidelines for interpretation to determine which individuals may be in need of help, (b) Neither of these scales has been utilized in a published follow-up study to test for reproducibility of their results or refinement of the scales, (c) these scales have not been validated with a population other than college students to determine if PIU exists in general population or other subpopulations. Replication of results will be crucial in furthering the understanding of PIU.

In addition to assessing non-student populations for incidence of PIU, future studies should examine subpopulations both in the college student population and general population. Most research to date has focused on college student and adult populations. There is very little information about high school Internet users who may face similar risk factors to college students (Kandell, 1998). A paucity also exists in literature with regards to minority populations such as African-Americans, Hispanics, Asians, and persons who speak English as a second language. New research involving these groups could provide insight into what role culture might play in Internet use. To date, no major study has explored possible cultural differences with regard to PIU. Furthermore, many of the published studies on PIU either have not reported the ethnicity of their participants
or the participants were almost exclusively Caucasian (the present sample was 93.7% Caucasian). An additional population within the college student population that deserves more investigation is “non-traditional” college students who actually make up a larger percentage of the student body than “traditional” college students at many institutions of higher education. Finally, in terms of evaluating the college student population, multiple campuses (including both 2 year and 4 year institutions) would be the soundest method of determining if results truly can be generalized across the college student population.

One area that should raise concern and generate further research was the high number of students (18.6%) who reported engaging in illegal activities while online. It seems very possible that this number was lower than the reality of student behavior for two reasons: (a) Students were instructed to exclude online music sharing from consideration for the illegal activity screening question. (b) It is highly likely that some students did not want to admit to engaging in socially unacceptable behavior (Davis, 2001a). The finding that male students (33.2%) were almost three times more likely than female students (12.4%) to report engaging in illegal activities while online might be worthy of additional study. Studying risk-taking behaviors of college students on this issue because results from the present study would suggest that students do not perceive their illegal activities as potentially damaging to themselves or their relationships. Evidence of this belief may be in students’ responses to the item concerning jeopardizing of significant relationships; only 2% of students stated that they believed that they had jeopardized a significant relationship, job, or educational opportunity by their behavior online.
The final and most salient reason for continuing to study PIU is the fact the Internet use continues to grow and evolve. The ways in which the Internet is integrated into people’s lives has changed dramatically just since the beginning of the present project. In that time the Internet has become a reality on cellular phones, portable digital assistants (PDA’s), and over wireless networks for laptop computers (Jones, 2002). The places where people can access the Internet are now almost unlimited. The speed of online connections continues to increase while the prices for such high-speed connections continues to drop making the Internet and its latest and most interactive applications more accessible than ever. As technologies such as live video and audio emerge, the Internet and the way people use it will continue to evolve. Thus, the need to understand why some people experience problems with this technology is crucial because it is essentially unavoidable in modern American society.
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APPENDIX A

REQUEST FOR EXEMPT STATUS
February 23, 2003

Compliance Manager
Human Subjects Research
Office of Research Compliance
117 Research & Technology Center
Ohio University
Athens, OH 45701-2979

Dear Members of the Review Board,

I am writing to request an exemption from the IRB approval of a research project I am planning for my dissertation. My study is entitled “Pathological Internet Use among College Students: The Prevalence of Problematic Internet Use and its Correlates.” The purpose of this study is to further explore the construct of Pathological Internet Use and associated problems. I have enclosed a completed copy of the Project Outline Form for research.

The proposed study is a survey questionnaire approach. Therefore, the study should categorized under category 2 under survey procedures. The contents of the survey (attached to the Project Outline Form) do not present an evident risk of harm to participants.

The participants in this study will be drawn from several regularly scheduled meetings in a large Midwestern university’s residence halls. The sample will complete a survey that includes a demographic information sheet and the Online Cognitions Scale. Participation is voluntary and all participants will be informed of their rights via an informed consent statement and an informed consent form of which participants will receive a copy. The informed consent form is based on Ohio University’s Consent Form Template.

I am requesting written IRB permission for a waiver. Thank you for your consideration. If you have any questions or concerns, please contact me at 317-640-4625 or my advisor and dissertation chair, Dr. Tom Davis, at 593-4460.

Sincerely,

Michael D. DiNicola
Doctoral Candidate
Principal Investigator

2420 Winfield Drive
Carmel, IN 46032
317-640-4625
dinicola9@hotmail.com

Thomas E. Davis, Ph.D., PCC
Dissertation Advisor

201 McCracken Hall
Ohio University
740-593-4460
davist@ohiou.edu
enclosures:  
1. Project Outline Form  
2. Informed Consent Form  
3. Demographic Information Sheet  
4. Online Cognitions Scale (OCS)  

cc:  Thomas Davis, Dissertation Chair
APPENDIX B

PROJECT OUTLINE FOR INSTITUTIONAL REVIEW BOARD
Title of Research Proposal: Pathological Internet Use among College Students: The Prevalence of Pathological Internet Use and its Correlates

Investigator(s) Information

Primary Investigator

Name: Michael DiNicola
Department: Counseling & Higher Education
Address: 2420 Winfield Drive, Carmel, Indiana 46032
Email: dinicola9@hotmail.com
Phone: 317-640-4525
Training Module Completed? ☐ Yes ☐ No
(Attach Certificate as Appendix H)
(www.research.ohiou.edu/cbt)

Co-investigators

Name _______________________________ Department ___________________
Address _______________________________________
(If off-campus, include city, state and zip code)
Email _____________________ Phone ___________________
Training Module Completed? ☐ Yes ☐ No
(Attach Certificate as Appendix H)

Attach sheets for additional co-investigators if necessary, and check here ☐

Advisor Information (if applicable)

Name: Tom Davis
Department: Counseling & Higher Education
Address: 201 McCracken Hall
Phone: 740-593-4460
Email: davist@ohiou.edu

Training Module Completed?  □ Yes  □ No  (Attach Certificate as Appendix H)
Anticipated Starting Date  9/2003  Duration 1 mos 0 yrs
(Work, including recruitment, can not begin prior to IRB approval. This date should never precede the submission date)

Funding Status

Is the researcher receiving or applying for external funding?  □ Yes  X No
(Note – This refers to funding from entities outside of Ohio University)
If yes, list source

(NOTE – If an application for funding has been submitted, a FULL copy of the funding application must accompany this form as APPENDIX G)
If yes, describe any consulting or other financial relationships with this sponsor.

Is there a payment of any kind connected with enrollment of participants on this study that will be paid to persons other than the research participants?  □ Yes  X No
(If yes, describe.)

Review Level

Based on the definition in the guidelines, do you believe your research qualifies for:
X  Exempt Review  Category ____________  2
___ Expedited Review  Category ____________
___ Full Committee Review

Final determination of review level will be determined by Office of Research Compliance in accordance with the categories defined in the Code of Federal Regulations

Prior Approval

If this or a similar protocol been approved by OU IRB or any other, please attach copy of approval and label as Appendix E.
Recruitment/Selection of Subjects

Estimated Number of Human Participants 600-800

Characteristics of subjects (check as many boxes as appropriate).

___ Minors ___ Physically or Mentally Disabled ___ Elementary School Students

___ Adults ___ Legal Incompetency ___ Secondary School Students

___ Prisoners ___ Pregnant Females

___ Others (Specify) ____________________ ___ University Students

Briefly describe the criteria for selection of subjects (inclusion/exclusion). Include such information as age range, health status, etc. Attach additional pages if necessary.

The target population for the study is traditional college students. Participants will be recruited in three possible ways: 1) Ohio University Institutional Research will provide 5,000 randomly selected student email accounts that will receive an email message that explains the present study and asks that the students to click on a link to contains survey if they choose to participate. 2) Flyers will be posted in Ohio University owned housing asking that students participate in the study by going online to a specified web address and completing the online survey. 3) An article may appear in the student newspaper on the topic of Pathological Internet Use and the present study; the article would include a link to the online survey. The student newspaper appears online and in print (this means of recruiting will only be employed if the student paper chooses to run an article on the topic).

How will you identify and recruit prospective participants? If subjects are chosen from records, indicate who gave approval for the use of the records. If records are "private" medical or student records, provide the protocol, consent forms, letters, etc., for securing consent of the subjects for the records. Written documentation for cooperation/permission from the holder or custodian of the records should be attached. (Initial contact of subjects identified through a records search must be made by the official holder of the record, i.e. primary physician, therapist, public school official.)

Permission/Access will be obtained from Ohio University Institutional Research to obtain a random sample of 5,000 student email addresses. Permission will be obtained from the Office of Residence Life to post flyers in University owned housing.

The student newspaper (The Post) will be contacted regarding their interest in producing an article about Pathological Internet Use and the present study.
Please describe your relationship to the potential participants, i.e. instructor of class, co-worker, etc. If no relationship, state no relationship.

No relationship.

Attach copies of all recruitment tools (advertisements, posters, etc.) and label as APPENDIX B

Performance Sites

List all collaborating and performance sites, and provide copy of IRB approval from that site and/or letters of cooperation or support.

The study will be conducted via an online survey exclusively with students from Ohio University. Due to the study being conducted on the World Wide Web (WWW), the demographic information sheet will include a screening question to eliminate students from outside Ohio University and other non-students. Results from non-Ohio University students and non-students will be excluded from the data analysis. The study will only be conducted when access is officially granted by Ohio University Institutional research and Ohio University Residence Life during the 2003 Fall Quarter.
Project Description

Please provide a brief summary of this project, using non-technical terms that would be understood by a non-scientific reader. Attach an additional page, if needed, but please limit this description to no more than one typewritten page.

The present study seeks to explore the construct of Pathological Internet Use among college students. Pathological Internet Use is a psychological dependence on the Internet (Kandell, 1998). Historically, Pathological Internet Use has been “characterized by (a) an increasing investment of resources (time, energy, money, etc.) in Internet-related activities, (b) unpleasant feelings (anxiety, depression, emptiness) when offline, (c) an increasing tolerance to the effects of being online, and (d) denial of the problematic behaviors” (Kandell, 1998).

Please describe the specific scientific objectives (aims) of this research and any previous relevant research.

The problem of the present study is to explore the prevalence of Pathological Internet Use among the college student population. Understanding this phenomenon is particularly important due to the college student population’s vulnerability to this problematic behavior (Kandell, 1998, Anderson, 2001, and Hall & Parsons, 2001). There is a minimal amount of research into Pathological Internet Use in general and Pathological Internet Use among the college student population in particular.

Many variations of definitions have been offered to describe the construct of Pathological Internet Use, but rarely has the current research been cross-referenced or the assessments validated (Davis, Flett, & Besser, 2002). Therefore, the present study seeks further clarify the construct of Pathological Internet Use by exploring its various dimensions with a Cognitive-Behavioral Checklist and the Online Cognitions Scale (Davis, Flett, and Besser, 2002).

Previous definitions (Goldberg, 1996; Young, 1997; and Kandell, 1998) of Pathological Internet Use have focused assessing internet-related behaviors usually via self-reported symptom checklists which may be tainted by impression control and subjects attempts to adhere to perceived rules of social appropriateness (Davis, Flett, and Besser, 2002). The present study will focus more upon the assessment of self-reported thoughts (cognitions) about the Internet than previous research. The assumption here is that persons using the Internet in a pathological manner think differently than healthy Internet users and will therefore report significantly different thoughts about their time
online (Davis, 2001). Additionally, the present study will seek to explore potential correlates of Pathological Internet Use and group differences among college student Internet users. The findings of this study may be useful to professionals in various educational and mental health settings.

Whether or not a person can become psychologically addicted or dependent on the Internet and if Pathological Internet Use should be added to the next revision of the Diagnostic and Statistical Manual of Mental of Disorders-Fourth Edition (DSM-IV) as a clinical disorder are still unanswered questions. However, the research clearly indicates that some individuals are experiencing negative consequences from their time spent online. Furthermore, a brief search on the Internet can demonstrate that there are already clinicians willing to offer treatment for this very new problem without much quality research to back up their actions. Therefore, in order to better define the problem of Pathological Internet Use and determine best practices for treatment, additional research is warranted.

Dr. Ivan Goldberg was the first to use the term Internet Addiction Disorder. Goldberg’s original term was known as Pathological Computer Use Disorder. The term Internet Addiction was first proposed by Goldberg on an online message board. Goldberg (1996) initially offered his definition Internet Addiction as a joke, but was subsequently overwhelmed by the response of individuals that responded to his message with serious concerns about their own or others Internet use. Later, Goldberg (1997) recommended that the term Internet Addiction was more appropriate than Pathological Computer Use to describe individuals spending excessive amounts of time online and experiencing negative consequences as a result.

Goldberg (1996, 1997) is not alone in proposing definitions of Internet Addiction, Pathological Internet Use, or Pathological Computer Use. Young (1997), Greenfield (2001), Grohol (1999), Anderson (2001), Hall and Parsons (2001), and others have proposed their own definitions of Pathological Internet Use. The construct of Pathological Internet Use has also been called many names in the literature and research such as computer addiction, Internet addiction disorder, problematic Internet use, and cyber addiction (Orzack & Orzack, 1999). Many other writers have offered their opinions and critiques of these definitions and a scant amount of empirical research has been conducted to date. This scarcity of empirical research into the phenomenon known as Pathological Internet Use suggests a need for further research. The scarcity of research in this area is even greater when subpopulations such as the college student population are considered, thus providing the justification for the present study.

Dr. Kimberly Young’s research ignited considerable debate and interest from the research community and general public. Young (1998) constructed a study that involved using the DSM-IV definition of pathological gambling as a model for defining Internet Addiction. The purpose of the study was to determine if Internet use could become addictive and to identify the severity of problems created by Internet overuse. Young’s study also sought to identify criteria for diagnosing Internet Addiction.

Young (1998) justified utilizing pathological gambling as a model since she believed it was the disorder most closely similar to Internet Addiction in terms of etiology. Both pathological gambling and Internet Addiction can be defined as impulse
control disorders that do not involve an intoxicant. The study utilized eight of ten items from the DSM-IV screening criteria for pathological gambling. Although, subsequent research and review has challenged some of Young’s (1998) techniques and findings, her research did provide the basis for later inquiries about Pathological Internet Use.

Recent studies of Pathological Internet Use have turned their focus toward specific populations. Kandell (1998), Anderson (2001), Hall and Parsons (2001), and Kubey, Lavin, and Barrows (2001) focused their research and theories on the college student population. The present study will seek to add to the body of research concerning a clinical definition of Pathological Internet Use and its prevalence among and impact upon the college student population. For the purposes of this study, the term Pathological Internet Use will be used interchangeably with terms such as Computer Addiction, Internet Addiction Disorder, Problematic Internet Use, and Cyber Addiction to refer to the same phenomenon. It is assumed from a clinical standpoint that Pathological Internet Use is the more appropriate term for the construct in question.
Methodology: please describe the procedures (sequentially) that will be performed/followed with human participants.

1) A) 5,000 student email accounts will receive an email request to participate in the present study; the email message will include a link to the online survey.

B) Flyers will be posted in University owned housing to encourage students to complete the online survey. The flyers will include a World Wide Web address to access the online survey.

C) (Possible) An article will appear in the student newspaper on the topic of Pathological Internet Use and the present study. The article will include a World Wide Web address to access the online survey.

2) Participants that agree to participate in the study by going to the World Wide Web address given we first see a screen about Informed Consent. The Informed Consent screen will include two buttons with options to participate in the online survey (AGREE) or to opt out of the survey (DECLINE).

3) The online survey will be presented in the following order: Demographic Information Sheet, Cognitive-Behavioral Checklist, and the Online Cognitions Scale. At the end of each section will be a button to submit the survey information and go on to the next. The final section will close with a message thanking the subject for their participation and providing contact information if the subject desires information about the study at its conclusion.

4) Completed survey data will be transferred to a network server that will compile a data base for analysis by the Statistical Package for the Social Sciences (SPSS)
Describe any potential risks or discomforts of participation and the steps that will be taken to minimize them.

There are no anticipated risks or discomforts associated with the completion of the questionnaire in the present study. Questionnaires will not include any identifying information that could be used to connect any participant with an individual questionnaire.

Describe the anticipated benefits to the individual participants. If none, state that. (Note that compensation is not a benefit, but should be listed in the compensation section on the next page.)

There are no anticipated benefits to individual participants. However, some participants may experience a greater understanding and/or appreciation for the amount of time they spend online.

Describe the anticipated benefits to society and/or the scientific community. There must be some benefit to justify the use of human subjects.

It is anticipated that the present study will help to better clarify the construct of Pathological Internet Use. The research is intended to help better understand the prevalence and correlates of Pathological Internet Use in the college student population. It is anticipated that this information will be useful to professionals, paraprofessionals, and students in various educational and mental health settings.
Describe procedures in place to protect confidentiality. Who will have access to raw data? Will raw data be made available to anyone other than the Principal Investigator and immediate study personnel (e.g., school officials, medical personnel)? If yes, who, how, and why? Describe the procedure for sharing data. Describe how the subject will be informed that the data may be shared.

The data set collected online will be entered into SPSS, a data processing package. The raw data will be available to the Principal Investigator and the dissertation committee if necessary for processing or interpretation of results. No other parties will have access to the raw data or means to identify participants.

Will participants be: Audiotaped?  
☐ Yes  
X No

Videotaped?  
☐ Yes  
X No

If so, describe how/where the tapes will be stored (i.e. locked file cabinet in investigator office), who will have access to them, and at what point they will be destroyed.

Not Applicable

Provide details of any compensation (money, course credit, gifts) being offered to participants, including how the compensation will be prorated for participants who discontinue participation prior to completion.

Not Applicable
Instruments

List all questionnaires, instruments, standardized tests below, with a brief description, and provide copies of each, labeled as APPENDIX C.

Demographic Information Sheet – Designed to collect information such as gender, class standing (Freshman, Sophomore, etc.), English as a Second Language Status, GPA, hours spent online, and various other questions related to the participant’s Internet use.

Cognitive-Behavioral Checklist – Designed by the primary researcher, this instrument is designed to collect behavioral (actions) and cognitive (thoughts) information about participants’ Internet Use. The overall purpose of this checklist is to determine the prevalence of students that meet the criteria for an Impulse Control Disorder related to their Internet use. This instrument is based on previous research of Pathological Internet Use. Since there is not currently one agreed upon definition of Pathological Internet Use (Grohol, 1999), the Cognitive-Behavioral checklist is a true-false survey that assesses the nine symptoms that are most consistently reported and assessed in the literature on Pathological Internet Use (Anderson, 2001; Armstrong et al., 2000; Brenner, 1997; Davis et al. 2002; Kubey et al., 2001; Morahan-Martin & Schumacher, 2000; Young, 1996). The following nine criteria are consistently supported in the literature (Anderson, 2001; Morahan-Martin & Schumacher, 2000; Young & Rogers, 1998) and are consistent with DSM-IV criteria for a person suffering from an impulse control disorder due to Pathological Internet Use. The nine symptoms assessed by the Cognitive-Behavioral checklist include: 1) preoccupation with the Internet or Internet related activities; 2) tolerance; 3) repeated attempts to control, reduce, or stop Internet use; 4) withdrawal; 5) Internet is used to escape problems or as a means of relieving dysphoric mood (e.g., helplessness, guilt, anxiety, depression); 6) lies to family members, significant others, employers, or therapist to conceal extent of involvement with the Internet; 7) Has committed illegal acts online (e.g., hacking into computer networks, copying files illegally, downloading illegal content); 8) Has jeopardized or lost a significant relationship, job or educational opportunity because of involvement with the Internet; 9) Feels guilt about the amount of time spent online and/ or guilt related to the activities engaged in online. Most studies have considered the positive reporting of four (liberal) or five (conservative) or more symptoms sufficient evidence for a diagnosis of Pathological Internet Use.

Online Cognitions Scale (OCS) - The OCS was developed and validated by Davis, Flett, and Besser (2002) and is consistent with previous research on the construct of Pathological Internet Use and focuses on cognition rather than behavior. The items are also based on adaptations of related measures of constructs including procrastination, depression, impulsivity, and pathological gambling.
The OCS consists of 36-items that assess 4 facets of Pathological Internet Use. The assessment yields scores for Impulsive Problematic Internet Use, Lonely/depressed Problematic Internet Use, Distraction Problematic Internet Use, Social Comfort Problematic Internet Use, and a total Problematic Internet Use score (Davis, Flett, and Besser, 2002). The OCS has demonstrated high internal consistency as a total measure of Pathological Internet Use with an alpha level of .94 and for each of its subscales: social comfort = 0.87, loneliness/depression = 0.77, diminished impulse control = 0.84, and distraction = 0.81 (Davis, et al., 2002). Participants are asked to respond to Likert-type items that include statements about the participant’s thoughts about the Internet. The statements run on a seven-point scale that ranges from “Strongly Agree” to “Strongly Disagree.” Some examples of OCS items include statements such as: “I often keep thinking about something I experienced online well after I have logged off:” and “People complain that I use the Internet too much.”

The OCS has also been validated against the following assessments: Barratt Impulsiveness Scale 11 (Cochran & Fischer, 2000), Center for Epidemiological Studies Depression Scale (Radloff, 1977), the UCLA Loneliness Scale version 3 (Russell, Peplau, & Cutrona, 1980), Procrastinatory Cognitions Inventory (Stainton, Lay, & Flett, 2000), the Internet Behavior and Attitudes Scale (Morahan-Martin & Schumacher, 2000), and the Rejection Sensitivity Questionnaire (Downey & Feldmen, 1996).

How will the data be analyzed? State the hypothesis and describe how the analysis of the data will test that hypothesis.

Data will be entered into SPSS 10.1, a statistical analysis program. Descriptive statistics will be conducted.

Primary Research Questions and Hypotheses

Research Question 1: Do a significant number of College Students report symptoms that are consistent with the definition of Pathological Internet Use?

This research question is addressed through the analysis of the data generated by the Cognitive-Behavioral checklist. A single sample \( t \)-test with one degree of freedom will be utilized to determine if a significant percentage of the sample meets either the liberal or conservative definitions of an Impulse Control Disorder related to Internet use. The \( t \)-test is an assessment of statistical significance used to test hypotheses for one or two means in situations where the population standard deviation is not known (Harris, 1998).

Harris (1998) noted that the \( t \)-test is a parametric statistic which includes the three following assumptions: 1) The utilization of a \( t \)-test presumes that scores have been collected via random sampling or independently sampled from the population which the researcher hopes to generalize. 2) It is assumed that the population that the sample is
drawn from is normally distributed. 3) It is assumed that the data collected is calculated on a scale of measure that it is logical to compute and talk about a mean. Each of these assumptions has been satisfied for the purposes of Research Question 1.

**Research Question 2:** Are there group differences in students that meet the criteria for PIU based on class standing?

Research Question 2 is addressed through the data collected by the demographic information sheet (class standing reported) and the Cognitive-Behavioral checklist (category assigned based on number of symptoms reported: Pathological Internet User or Non-Pathological Internet User).

**Research Question 3:** Are there group differences in students that meet the criteria for PIU based on gender?

Research Question 3 is addressed through the data collected by the demographic information sheet (gender reported) and the Cognitive-Behavioral checklist (category assigned based on number of symptoms reported: Pathological Internet User or Non-Pathological Internet User).

This study utilizes a factorial analysis of variance (MANOVA) to address the second and third research questions. There are two independent variables that are categorical (gender and class rank) and one dependent variable (number of symptoms reported on the Cognitive-Behavioral checklist) that are continuous variables. Therefore, a factorial multivariate analysis of variance is the correct data analysis technique for research questions two and three (Cozby, 1993). The MANOVA analyzes multiple dependent and multiple independent measures simultaneously and explores interaction (Harris, 1998). Advantages of this research design include maintaining a high overall alpha level while exploring the combination dependent variables. MANOVA is a robust procedure that permits repeated measures, unequal cell sample sizes, and multiple dependent variables (Harris, 1998).

**Ho1:** There will be significant number of students that meet the stated criteria for Pathological Internet Use.

**Ha1:** There will not be significant number of students that meet the stated criteria for Pathological Internet Use.

**Ho2:** There will be a significantly greater percentage of Freshman students that meet the criteria for Pathological Internet Use than upperclassmen (Sophomores, Juniors, Seniors, and Graduate Students) that meet the criteria for Pathological Internet Use.

**Ha2:** There will not be a significantly greater percentage of Freshman students that meet the criteria for Pathological Internet Use than upperclassmen (Sophomores, Juniors, Seniors, and Graduate Students) that meet the criteria for Pathological Internet Use.

**Ho3:** There will be a significantly greater percentage of male students that meet the criteria for Pathological Internet Use than female students that meet the criteria for Pathological Internet Use.
Ha3: There will not be a significantly greater percentage of male students that meet the criteria for Pathological Internet Use than female students that meet the criteria for Pathological Internet Use. The research hypotheses explored with the factorial MANOVA include:

**Interaction Effects**
Ho4: There is no interaction between gender and class rank, and the number of symptoms of an Impulse Control Disorder reported.
Ha4: There is interaction between gender, class rank, and the number of symptoms of an Impulse Control Disorder reported.

**Main Effects**
Ho5: The gender of the student does not affect the number of symptoms of an Impulse Control Disorder reported.
Ha5: The gender of the student does affect the number of symptoms of an Impulse Control Disorder reported.
Ho6: The class standing of the student does not affect the number of symptoms of an Impulse Control Disorder reported.
Ha6: The class rank of the student does affect the number of symptoms of an Impulse Control Disorder reported.

**Informed Consent Process** Attach copies of all consent documents or text and label as APPENDIX A.

Informed consent is a process, not just a form. Potential participants/representatives must be given the information they need to make an informed decision to participate in this research. How will you provide information/obtain permission?

The informed consent statement will be read present online prior to the presentation of the survey. Subjects will have the opportunity to accept or decline to participate in the study without penalty by clicking a button on their computer screen to participate or opt out of the study before starting the online survey. The subjects will also have the opportunity to end their participation in the study at any point prior to clicking the submit button at the end of each section of the survey.

How and where will the consent process occur? How will it be structured to enhance independent and thoughtful decision-making? What steps will be taken to avoid coercion or undue influence?

The consent process start with informed consent statement that precedes the survey. Potential participants will have the option of accepting the terms of the informed consent
to complete the survey or decline to participate with no penalty. The potential subjects will also be told that they may terminate their participation at any time in the informed consent statement. There will no expressed or implied consequences for declining to participate in the study or terminating their participation. The survey will also include contact information in its final section for participants that may have questions or concerns about the study.

Will the investigator(s) be obtaining all of the informed consents? ☑ Yes  X No
If not, identify by name and training who will be describing the research to subjects/representatives and inviting their participation?

Informed consent will be obtained online; participants will see a screen (statement) about informed consent and have the option accepting the informed consent and continuing with survey or declining and opting out of the survey.

Will all adult participants have the capacity to give informed consent?  If not, explain procedures to be followed.

All participants will have the capacity to give informed consent.

If any participants will be minors, include procedures/form for parental consent and for the assent from the minor.

Not applicable.

Are you requesting a waiver or alteration of Informed Consent? X Yes  ☑ No

I am requesting that the informed consent information be placed online prior to the survey. No paper copies of the informed consent will be produced for this study. Subjects that complete the survey will have read the informed consent statement prior to completing the survey and will be provided with contact information at the end of the survey if they have questions or concerns about their participation in the study.

An IRB may approve a consent that does not include, or alters, some or all of the elements of informed consent. Provide justifications below for the waiver.

a. Describe how the proposed research presents no more than minimal risk to participants.

Survey research by its nature is consider to of low risk to participants.
b. Why will a waiver of informed consent not adversely affect the rights and welfare of participants?

Participants will be made aware of their rights and will not suffer any negative consequences whether or not they choose to participate in the study.

c. Why is it impracticable to carry out the research without a waiver or alteration of informed consent?

Since the study will be conducted online, traditional signed paper informed consent forms are not practical. Furthermore, the elimination of the paper informed consent with participants names provides additional protection of confidentiality.

d. How will pertinent information be provided to participants, if appropriate, at a later date?

Not Applicable

Even if waiver of written informed consent is granted, you will likely be required to obtain verbal permission that reflects the elements of informed consent (if appropriate). Please specify below information to be read/given to participants.

Participants will see a screen containing the following information:

Title of Research: Internet Use among College Students
Principal Investigator: Mike DiNicola
Department: Counseling and Higher Education

Federal and university regulations require consent for participation in research involving human subjects. After reading the statements below, please indicate clicking on the “AGREE” to participate in the study or the “DISAGREE” to decline to participate in the study.

Explanation of Study

Purpose of the research: To better understand how college students use the Internet and their feelings associated with the Internet.
Procedures to be followed: Participants will be asked to complete a questionnaire that will take from 5 to 10 minutes to complete.

Risks and Discomforts
No risks or discomforts are anticipated from participation in the present study.

Benefits
No benefits will be derived from participating in this study.

Confidentiality and Records
All survey data reported is confidential. The survey has no identifying marks or coding that would allow the researcher or any one else to determine a participant’s identity.

Compensation
No compensation is offered for participating in the present study.

Contact Information
If you have any questions regarding this study, please contact: Mike DiNicola at 740-640-4625 or via email at dinicola9@hotmail.com

If you have any questions regarding your rights as a research participant, please contact Jo Ellen Sherow, Director of Research Compliance, Ohio University, (740) 593-0664.

I certify that I have read and understand this consent form and agree to participate as a subject in the research described. I agree that known risks to me have been explained to my satisfaction and I understand that no compensation is available from Ohio University and its employees for any injury resulting from my participation in this research. I certify that I am 18 years of age or older. My participation in this research is given voluntarily. I understand that I may discontinue participation at any time without penalty or loss of any benefits to which I may otherwise be entitled.

[AGREE] [DISAGREE]
Will participants be deceived or incompletely informed regarding any aspect of the study? □ Yes  X  No

If so, provide rationale for use of deception.

Not Applicable

Attach copies of post-study debriefing information and label as APPENDIX D.
Investigator Assurance

I certify that the information provided in this outline form is complete and correct.

I understand that as Principal Investigator, I have ultimate responsibility for the protection of the rights and welfare of human subjects, conduct of the study and the ethical performance of the project.

I agree to comply with Ohio University policies on research and investigation involving human subjects (O.U. Policy # 19.052), as well as with all applicable federal, state and local laws regarding the protection of human subjects in research, including, but not limited to the following:

- The project will be performed by qualified personnel, according to the OU approved protocol.
- No changes will be made in the protocol or consent form until approved by the OU IRB.
- Legally effective informed consent will be obtained from human subjects if applicable, and documentation of informed consent will be retained, in a secure environment, for three years after termination of the project.
- Adverse events will be reported to the OU IRB promptly, and no later than within 5 working days of the occurrence.
- All protocols are approved for a maximum period of one year. Research must stop at the end of that approval period unless the protocol is re-approved for another term.

I further certify that the proposed research is not currently underway and will not begin until approval has been obtained. A signed approval form, on Office of Research Compliance letterhead, communicates IRB approval.

Principal Investigator Signature ______________________________ Date ____________

Co-Investigator Signature ______________________________ Date ____________
Faculty Advisor/Sponsor Assurance

By my signature as sponsor on this research application, I certify that the student(s) or guest investigator is knowledgeable about the regulations and policies governing research with human subjects and has sufficient training and experience to conduct this particular study in accord with the approved protocol. In addition:

- I agree to meet with the investigator(s) on a regular basis to monitor study progress.
- Should problems arise during the course of the study, I agree to be available, personally, to supervise the investigator in solving them.
- I assure that the investigator will report significant or untoward adverse events to the IRB in writing promptly, and within 5 working days of the occurrence.
- If I will be unavailable, as when on sabbatical or vacation, I will arrange for an alternate faculty sponsor to assume responsibility during my absence.

I further certify that the proposed research is not currently underway and will not begin until approval has been obtained. A signed approval form, on Office of Research Compliance letterhead, communicates IRB approval.

Advisor/Faculty Sponsor Signature ____________________________ Date ____________

*The faculty advisor/sponsor must be a member of the OU faculty. The faculty member is considered the responsible party for legal and ethical performance of the project.
Checklist:
- Completed and Signed IRB-1 (this form)
- Appendix A - copies of all consent documents (in 12 pt. Font) including
  - [ ] Informed Consent to Participate in Research (adult subjects)
  - [ ] Parental Permission/Informed Consent (parents of subjects who are
    minors or children)
  - [ ] Assent to Participate in Research (used when subjects are minors or
    children)
- Appendix B - copies of any recruitment tools (advertisements, posters, etc.)
- Appendix C – copies of all instruments (surveys, standardized tests, questionnaires, interview topics, etc.).
- Appendix D - Copies of debriefing text
- Appendix E - Approval from other IRB, School District, Corporation, etc.
  - [ ] Appendix F - Any additional materials that will assist the Board in
    completing its review
  - [ ] Appendix G – Copies of any IRB approvals
  - [ ] Appendix H – Copies of Human Subjects Research Training Certificates
    (for all key personnel involved in non-exempt research)

All fields on the form must be completed, regardless of review level. If a field is not
applicable, indicate by inserting n/a. Incomplete forms will result in delayed processing.
Forward this completed form and all attachments to:

Human Subjects Research
Office of Research Compliance
117 Research & Technology Center, Ohio University, Athens, OH 45701-2979

Questions? Visit the website at www.ohio.edu/research/compliance/ or email
compliance@ohio.edu
APPENDIX C

DEMOGRAPHIC INFORMATION SHEET
**Internet Use Survey**

All information on this survey is confidential and anonymous. It will not be used for any purposes other than the expressly stated research. Please answer all questions as honestly as possible.

1) Gender (Select One): __ Male __ Female

2) Age: _____

3) College currently attending: ___Ohio University ___Other College ___None

4) Class Standing (Select One): ___Freshman ___Sophomore ___Junior ___Senior ___Grad

5) Ethnicity (Select One): ___African American/Black ___Asian ___Caucasian/White ___Latino/Hispanic ___Native American ___Multi-Ethnic ___Other

6) I spend an average of ______ hours per week online.

7) Please indicate which ONE of the following Internet Tools/Applications you use most frequently for your personal Internet use (Internet use that is NOT for SCHOOL or WORK purposes)

   _____ Email    _____ Instant Messaging/Chat    _____ Web Browser / Surfing
   _____ MUDS /Online Games _____ Auctions/Shopping _____ Gambling
   _____ Music Sharing/File Swapping _____ Pornography _____ Other

8) Using the choices below, indicate the extent to which your use of the Internet affects you.

   0 = No Opinion
   1 = Affects me in a positive way
   2 = Affects me in a negative way

Please circle the appropriate response:

A) Current relationships 0 1 2
B) Academic Success 0 1 2
C) Getting Enough Sleep 0 1 2
D) Being Late for or Missing Classes 0 1 2
APPENDIX D

COGNITIVE-BEHAVIORAL CHECKLIST (CBC)
COGNITIVE-BEHAVIORAL CHECKLIST

Please answer the following questions with regard to your personal Internet use. Please **DO NOT** include activities related to academic (school) or business (work) related activities. Please select the answers that are most accurate for your personal Internet use.

<table>
<thead>
<tr>
<th></th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>When I am offline, I am preoccupied with thoughts about things on the Internet.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Over time, I have had to spend more time online in order to achieve satisfaction.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I have made unsuccessful attempts to reduce or control my use of the Internet.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I become restless or irritable when I am required to reduce my time online.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I often use the Internet as a way to escape my problems or to change my mood (example: feelings of depression, loneliness, guilt, or anxiety).</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I have lied to family, friends, a significant other, employer, or therapist to conceal the amount of time I spend online or the type content I access.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>I have NOT* committed an illegal act online (examples: hacking into computer networks, copying files illegally, downloading illegal content) *Do NOT include sharing or swapping of music files.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>I have jeopardized or lost a significant relationship, job, or educational opportunity due to my involvement with the Internet.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>I do NOT feel guilty about the amount of time I spend on the Internet or about the content I access while online.</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX E

ONLINE COGNITIONS SCALE (OCS)
This questionnaire asks you about your thoughts related to the Internet. For each of the following questions, choose a number between "1" and "7" according to the scale shown below:

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neither Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. I am most comfortable online:  
   5 6 7 1 2 3 4

2. Few people love me other than those I know online:  
   5 6 7 1 2 3 4

3. I feel safest when I am on the Internet:  
   5 6 7 1 2 3 4

4. I often keep thinking about something I experienced online well after I have logged off:  
   5 6 7 1 2 3 4

5. When I am on the Internet, I often feel a kind of "rush" or emotional high:  
   5 6 7 1 2 3 4

6. You can get to know a person better on the Internet than in person:  
   5 6 7 1 2 3 4

7. I often find it peaceful to be online:  
   5 6 7 1 2 3 4

8. I can be myself online:  
   5 6 7 1 2 3 4

9. I get more respect online than 'in real life':  
   5 6 7 1 2 3 4

10. I use the Internet more than I ought to:  
    5 6 7 1 2 3 4

11. People complain that I use the Internet too much:  
    5 6 7 1 2 3 4

12. I never stay on longer than I had planned:  
    5 6 7 1 2 3 4

13. People accept me for who I am online:  
    5 6 7 1 2 3 4

14. Online relationships can be more fulfilling than offline ones:  
    5 6 7 1 2 3 4

15. When I am not online, I often think about the Internet:  
    5 6 7 1 2 3 4
16. I am at my best when I am online: 1 2 3 4
   5 6 7
17. The offline world is less exciting than what you can do online: 1 2 3 4
   5 6 7
18. I wish my friends and family knew how people regard me online: 1 2 3 4
   5 6 7
19. The Internet is more 'real' than real life: 1 2 3 4
   5 6 7
20. When I am online I don’t think about my responsibilities: 1 2 3 4
   5 6 7
21. I can't stop thinking about the Internet: 1 2 3 4
   5 6 7
22. I am less lonely when I am online: 1 2 3 4
   5 6 7
23. I cannot see myself ever without the Internet for too long: 1 2 3 4
   5 6 7
24. The Internet is an important part of my life: 1 2 3 4
   5 6 7
25. I feel helpless when I don't have access to the Internet: 1 2 3 4
   5 6 7
26. I say or do things on the Internet that I could never do offline: 1 2 3 4
   5 6 7
27. When I have nothing better to do, I go online: 1 2 3 4
   5 6 7
28. I find that I go online more when I have something else I am supposed to do: 1 2 3 4
   5 6 7
29. When I am online, I don’t need to think about offline problems: 1 2 3 4
   5 6 7
30. I sometimes use the Internet to procrastinate: 1 2 3 4
   5 6 7
31. When I am online, I can be carefree: 1 2 3 4
   5 6 7
32. I often use the Internet to avoid doing unpleasant things 1 2 3 4
   5 6 7
33. Using the Internet is a way to forget about the things I must do but really don't want to do 1 2 3 4
   5 6 7
34. Even though there are times when I would like to, I can't cut down on my use of the Internet 1 2 3 4
   5 6 7
35. I am bothered by my inability to stop using the Internet so much 1 2 3 4
   5 6 7
36. My use of the Internet sometimes seems beyond my control.

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APPENDIX F

PERMISSION TO USE OCS
Hi Michael,

Thank you for your interest in our research. The scale has recently received much attention and is being used extensively in research in this area. Attached is the OCS with scoring key, and a copy of the citation article which describes its psychometric properties.

I would love to hear about your results when you are done!

Best of luck in your research,
Richard Davis

----- Original Message ----- 
From: "Mike DiNicola" <MDiNicola@brebeuf.org> 
To: <davisr@YorkU.CA> 
Sent: Thursday, January 30, 2003 2:30 PM 
Subject: Online Cognition Scale

> Dr. Davis,
> 
> My name is Michael DiNicola, I am a Counselor Education student at Ohio University completing my doctoral dissertation on pathological internet use among the college student population. I am very interested in learning more about the development of the OCS. I am currently trying to find a validated assessment to use for my research and your sounds as if you may have what I need.
> 
> Would it be possible to obtain a copy of the article from CyberPsychology and Behavior that discusses the OCS validation and a scoring key? I would be interested in using your assessment (pending my advisor's approval) and sharing all data collected (and credit due).
> 
> Thanks in advance for any assistance you can provide.
> 
> Sincerely,
> 
> Mike DiNicola
> Guidance Counselor
> Brebeuf Jesuit Preparatory School
APPENDIX G

PERMISSION TO USE OCS ONLINE
No problem. Just don't publish the scoring key anywhere.

Best,
Richard

----- Original Message ----- 
From: "Mike DiNicola" <MDiNicola@brebeuf.org>
To: <richard@victoriapoint.com>
Cc: <davist@ohio.edu>
Sent: Monday, March 17, 2003 11:26 AM
Subject: Re: Online Cognition Scale

> Richard,
> 
> I wanted to thank you for allowing me to utilize the OCS for my dissertation. My dissertation committee has accepted my proposal (1st 3 chapters) with changes. One of the changes they would like to see is me running the study online.
> 
> I am writing to request permission administer the OCS online. My intention is conduct the research online with no more than 3 universities. We would also be conducting a paper and pencil pilot study.
> 
> Please let me know if what I am proposing is acceptable.
> 
> Thanks again for your help,
> 
> Sincerely,
> 
> Mike DiNicola
> Guidance Counselor
> Brebeuf Jesuit Preparatory School
> 2801 West 86th Street
> Indianapolis, IN 46268
> mdinicola@brebeuf.org
> 317-872-7050 ext. 6628
> 317-870-2766 (FAX)
APPENDIX G

PERMISSION MODIFY OCS
From: richard@victoriapoint.com
To: "Michael D. DiNicola"
Subject: Re: Online Cognitions Scale
Date: Aug 19, 2003 4:42 PM

Feel free to use the scale how you'd like.

Richard

----- Original Message ----- 
From: "Michael D. DiNicola" <michaeldincola@earthlink.net> 
To: <richard@victoriapoint.com> 
Sent: Sunday, August 17, 2003 8:10 PM 
Subject: Online Cognitions Scale

> Richard,

> This is Mike DiNicola. I wrote to you several months ago to seek your permission to use the OCS in my dissertation project. Things have progressed since I last wrote and I am getting ready to conduct the study online this fall.

> I have found that the online research tool Ohio University is allowing me to use will limit the number of questions I can include in the study. Therefore, I am writing to ask if it would be acceptable for me to use the Lonely/Depressed PIU and Impulsive PIU subscales in my project. These two subscales are most in line with my research questions.

> Please let me know if this modification would be acceptable and thanks again for your assistance.

> Sincerely,

> Mike DiNicola
APPENDIX I

ONLINE SURVEY
College Student Internet Survey

The purpose of this survey is to better understand how college students use the Internet. No risks or discomforts are anticipated from participation in the present survey. There are no anticipated benefits to individual participants. However, society may benefit by increasing its understanding of the role the Internet plays in the lives of students. All survey data reported is confidential. No compensation is offered for participating in the present study. If you have any questions regarding your rights as a research participant, please contact Jo Ellen Sherow, Director of Research Compliance, Ohio University, (740) 593-0664. By completing this survey, I certify that I have read and understand this consent form and agree to participate as a subject in the research described. I agree that known risks to me have been explained to my satisfaction and I understand that no compensation is available from Ohio University and its employees for any injury resulting from my participation in this research. I certify that I am 18 years of age or older. My participation in this research is given voluntarily. I understand that I may discontinue participation at any time without penalty.

1) Please select your gender:
   - Female
   - Male

2) Please select your age range
   under 18
   - 18 – 24
   - 25 – 34
   - 35 – 44
   - 45 or over

3) What college are you currently attending?
   - Ohio University
   - Other College
   - Not Attending College
4) Enter your current class standing:
   - Freshman
   - Sophomore
   - Junior
   - Senior
   - Graduate

5) Please select your ethnicity:
   - African-American / Black
   - Asian
   - Caucasian / White
   - Latino / Hispanic
   - Native American
   - Multi – Ethnic
   - Other

6) On average, how many hours per week do you spend online?
Enter number of hours below:

7) Which of the following Internet Activities do you engage in most frequently for your personal Internet use (Internet use that is NOT for school or work use)?
   - e-mail
   - online games / MUDS
   - instant messaging / IM/ chat
   - auctions / shopping
   - surfing / web browsing
   - gambling
   - music sharing / file swapping
   - pornography
   - other

8) When I am offline, I am preoccupied with thoughts about things on the Internet.
   - True
   - False

9) Over time, I have had to spend more time online in order to achieve satisfaction.
   - True
   - False

10) I have made unsuccessful attempts to reduce or control my use of the Internet.
    - True
    - False
11) I become restless or irritable when I am required to reduce my time online.
   - True
   - False

12) I often use the Internet as a way to escape my problems or to change my mood (example: feelings of depression, loneliness, guilt, or anxiety).
   - True
   - False

13) I have lied to family, friends, a significant other, employer, or therapist to conceal the amount of time I spend online or the type content I access.
   - True
   - False

14) I have NOT* committed an illegal act online (examples: hacking into computer networks, copying files illegally, downloading illegal content) *Do not include sharing or swapping of music files.
   - True
   - False

15) I have jeopardized or lost a relationship, job, or educational opportunity due to my involvement with the Internet.
   - True
   - False

16) I do NOT feel guilty about the amount of time I spend on the Internet or about the content I access.
   - True
   - False

17) My use of the Internet affects my Current Relationships...
   - Positively
   - Negatively
   - Neutral

18) My use of the Internet affects my Academic Success...
   - Positively
   - Negatively
   - Neutral
19) My use of the Internet affects my ability to Get Enough Sleep...
   o Positively
   o Negatively
   o Neutral

20) My use of the Internet affects me Being Late for or Missing Classes...
   o Positively
   o Negatively
   o Neutral

21) Few people love me other than those I know online:
   o Agree
   o Disagree
   o No Opinion

22) I often keep thinking about something I experienced online well after I have logged off:
   o Agree
   o Disagree
   o No Opinion

23) When I am on the Internet, I often feel a kind of "rush" or emotional high:
   o Agree
   o Disagree
   o No Opinion

24) I use the Internet more than I ought to:
   o Agree
   o Disagree
   o No Opinion

25) People complain that I use the Internet too much:
   o Agree
   o Disagree
   o No Opinion

26) I never stay online longer than I had planned:
   o Agree
   o Disagree
   o No Opinion
27) When I am NOT online, I often think about the Internet:
   o Agree
   o Disagree
   o No Opinion

28) The offline world is less exciting than what you can do online:
   o Agree
   o Disagree
   o No Opinion

29) I can't stop thinking about the Internet:
   o Agree
   o Disagree
   o No Opinion

30) I am less lonely when I am online:
   o Agree
   o Disagree
   o No Opinion

31) I cannot see myself ever without the Internet for too long:
   o Agree
   o Disagree
   o No Opinion

32) The Internet is an important part of my life:
   o Agree
   o Disagree
   o No Opinion

33) I feel helpless when I don't have access to the Internet:
   o Agree
   o Disagree
   o No Opinion

34) Even though there are times when I would like to, I can't cut down on my use of the Internet:
   o Agree
   o Disagree
   o No Opinion
35) I am bothered by my inability to stop using the Internet so much:
   o Agree
   o Disagree
   o No Opinion

36) My use of the Internet sometimes seems beyond my control:
   o Agree
   o Disagree
   o No Opinion

Submit Form
Survey ID: C3682509C2E14B078A3E67DC37DA3799
Contact Name: Mike DiNicola
Contact Email: michaeldinicola@earthlink.net
Sponsor Dept: Counseling & Higher Education
Valid Dates: 09/08/2003 - 10/08/2003

*This online document was modified from its original appearance to meet specifications for Ohio University’s Electronic Thesis and Dissertation Submission Requirements*
APPENDIX J

RECRUITING FLYERS
Internet User?

Did you know that some studies have suggested that it is possible to become dependent on the Internet?

Does the Internet help or hinder…

Your relationships?
Your school or work performance?
Your sleep habits?

A graduate student at OU is trying to answer these questions and others related to college students’ Internet use.

Please take a few minutes to participate in this study about college students’ Internet use by taking one of the tear-offs below and typing the web address into your browser.

**This study is open to ALL current Ohio University undergraduate and graduate students**

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APPENDIX K

RECRUITING EMAIL MESSAGE
Dear Fellow OU Student,

You have been randomly selected to participate in a study on College Student Internet use. I am a graduate student at Ohio University who is currently studying how the Internet impacts the lives of college students both positively and negatively. This survey is completely confidential. Please take a few minutes to complete the survey by clicking on the link below:


(if the above URL wraps and does not work, copy and paste both lines into the address bar of your browser then click ENTER)

Thank you for your participation.

Sincerely,

Mike DiNicola
Doctoral Candidate
Ohio University
Counseling & Higher Education