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PROBLEMATIC INTERNET USE IN RESIDENCE HALLS

by

GRAHAM QUIRK
B. S. Canisius College, 1996
M.S. Canisius College, 2002

A dissertation submitted in partial fulfillment of the requirements
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ABSTRACT

College students are at higher risk to develop problematic internet use (PIU) than the average person and that risk may negatively impact their college success. Since students with PIU are not violating policies, they are not being identified as having a problem through the student conduct process like other students with problems such as alcohol abuse. While research on PIU is still in its infancy, the research that has been conducted indicates that PIU is a growing problem with no agreed upon definition, diagnosis or treatment. The main purpose of this study was to determine the extent that PIU and PVP exists in residence halls on college campuses. The theoretical framework was the addiction syndrome theory (AST) and is the only current model that can be used to explain all addictions, including behavioral addictions which is the category of addiction the PIU falls under. The main measurement tool was the Young internet addiction test (IAT) which measures levels of online activity.

The results of this study were inconclusive. There was a low correlation between online activity and academic performance as measured by academic probation. The weak relationship indicates that PIU may be an issue for college students and therefore may need to be considered when administrators are making policies. Whether the AST proves to be a valid conceptual framework for studying PIU and other addictions remains to be seen. The results here were inconclusive and therefore further research involving AST is needed before drawing any real conclusions.

This dissertation is dedicated to all of my family

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By far the most challenging educational task I have completed is this dissertation and I have learned more through the process of completing this dissertation than I could have predicted at the beginning. The weight of this task was significantly reduced thanks to having a strong committee. Their ability to communicate effectively with me and each other really allowed me to focus on my writing. Their patience and guidance really made this research better than it otherwise would have been and I really appreciate all that they have done for me.

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For better or worse, the greatest influence in many of our lives comes from our family. I was fortunate enough to have grown up in house full of love and understanding. I have a sister who loved me even though, in my opinion, I was not the best of little brothers to have. And I have a mother and father whose unconditional love and infinite patience allowed for me to learn how to get back up after falling down.

I now have my own children. All 3 have inspired me to be a better person. I love you all in a way that you cannot understand until you have children of your own. You each are the best thing I have ever done and I hope someday you are able to view me in the way that I view my father.

There are many benefits to getting older and the biggest is probably the wisdom you gain with passing years. 10 years ago I was wise enough to convince my best friend, who was way out of my league, to marry me. Our marriage has not been perfect but the memories are. Thank you for all that you are and all you have given.

To all of my family - thank you for being in my life. You are far better than I deserve.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1: INTRODUCTION

Background

College dormitories have been around for centuries in various forms and serve various purposes such as place to sleep or a place to discuss ideas with peers. Historically, dormitories predate colleges; students of some of the most well-known teachers of all time, including Confucius and Socrates, travelled long distances to learn from their teachers. These students frequently lived together and often their teachers joined them, pooling their resources and increasing opportunities to interact with one another. The assumption made by these ancient teachers is learning does not stop outside of the class and is a similar concept to modern dormitories (Lucas, 2006).

That being the case, the first student dormitories at recognized universities, such as the universities of Paris and Oxford, appeared in the 14th century; students needed/wanted lower rent and were easy targets for crime as they were far from home. In 1453, the University of Paris became the first university to require students to live on campus; living with other students was considered favorable to a student's development (Blimling & Miltenberger, 1990).

Many American universities drew inspiration from British universities such as Cambridge and Oxford. America began as a British colony; founding leaders of American universities, often graduates of Oxford and Cambridge, naturally looked to these institutions when establishing the first universities here in America. British universities valued the out-of-class experience and the opportunities for student growth provided by having their students live together on campus (Thelin, 2011).   Practical considerations also influenced considerations regarding where and how students should live. For example, when Harvard was established in

1636, there were no large cities that could naturally serve as a home to a fledgling university, providing food services and options for accommodations. In addition, university students were often much younger than today as high schools had not yet been established. The lack of city services and amenities, along with the youth of the incoming students, meant that dormitories were necessary as there was no other suitable place for them to live (Rudolph & Thelin, 1990). Prior to the 20th century, dormitories in America were designed to provide a quiet place to study and sleep.

Over the course of the next 300 years, dormitories fell out of favor. By the 1800s, university leaders felt that financial resources should be spent exclusively on academics, leading some universities to abandon their dormitories while new universities simply did not include them in their building plans. During that time, only the British higher education system continued to value dormitories. At British universities, dormitories continued to be considered as an integral part of the college learning process (Blimling & Miltenberger, 1990).

The 20th century brought many changes that started an expansion in the number of dormitories and eventually a reshaping of their purpose and design. By 1918, all children in the United States were required to attend, at minimum, elementary school. Secondary education had seen significant growth by this point as well and, although it was not mandatory or available to all, it did increase the number of people who were prepared to attend an institution of higher education. All these achievements constituted progress towards increasing who had access to higher education. Instead of higher education being mainly for the rich, people who were capable, regardless of monetary wealth, now also had access (Watson, 2008). By increasing the number of people who had access to secondary education, the number of people who attended university also increased.

While the 20th century brought the expansion of elementary and secondary education that led to an increase in access to higher education, the start of World War II provided women with greater access to higher education as the men went overseas to fight. The end of World War II led to the GI Bill that provided a college education to many who may not have considered it previously. Two decades after World War II, a flood of Baby Boomers entered colleges and universities in the 1960's, precipitating a period of growth and university culture change. All of these factors produced an enormous growth in enrollment and a resulting growth in the number of dormitories (Watson, 2008). This period of growth meant that dormitories were once again starting to be considered an extension of the learning that was conducted in the classroom. Students spent a small fraction of the day in class and the dormitories were a previously underutilized tool to extend the learning experience (Palmer, Broido, & Campbell, 2008). This was the beginning of the change from dormitories to the concept of residence halls.

All of this growth and development of residence halls, along with the population of university students, led to a proliferation of research on university students and where they live. Many studies were conducted in the 1960s and 1970s that looked at college students' needs and how residence halls could be utilized to help meet those needs. One of the biggest names in the field of student affairs, Arthur Chickering, started his pioneering research during this time. Others came after and for the next half-century names like Astin, Pascarrella and Terenzini, among many others, produced a large amount of research revolving around college students, residence life, and the effects of where they live (Palmer et al., 2008).

The results from all of this research (Blimling, 1989; Chickering, 1974; Pascarella, 1985; Pascarella & Terenzini, 1991; Tinto, 1993) helped determine what college students need from a residence hall in order to be successful. Their needs balanced with their wants have led to more

and more residence halls where students have all the conveniences of home, including single rooms, internet access, and personal computers (Stephey, 2014).

Technology has increased exponentially since the creation of the first computer. Because of the limitations of the early computers, video games did not hold a person's attention for long periods of time. As technology developed, computer capabilities increased and as a result video games became more immersive. With the introduction of the Internet to the public, it added a social aspect to video games that was not present previously. The development of all this technology, combined with the evolution of the residence hall, has created a unique problem for residence life professionals and the students that they serve. Specifically, students can isolate themselves from their roommates and the rest of the university while staying connected to millions of other players in an extremely immersive, graphically stunning world all day every day.

Isolation created by the assigning of a private space (the dorm room) is particularly troublesome for college students as research has indicated that college students are at higher risk to develop problematic internet use (PIU) and problematic video game play (PVP). Theories on student development indicate that adolescents and college-aged students are at a period of developmental transition where they are trying to develop a deeper sense of their identity. Socialization on campus is a key aspect to this development (Renn & Reason, 2013) and a key component to student retention and graduation (Astin, 1993, 1999).

Some research does exist that supports the notion that socialization via the internet can help college students develop their sense of identity (E. Ceyhan, 2010; Israelashvili, Kim, & Bukobza, 2012; Lo, Wang, & Fang, 2005) through the anonymity that the internet provides which allows some people to express themselves in a way that they can't in the real world thus

4

reducing their social anxiety. However most research has shown that excessive internet use leads to feelings of depression and loneliness (Campbell, Cumming, & Hughes, 2006; Junghyun, LaRose, & Wei, 2009; Kalkan, 2012; Lo et al., 2005; Whang, Lee, & Chang, 2003). So, although the Internet does have a social aspect that can aid some students in their social development, these benefits do not appear to translate to the real world and therefore internet socialization will not increase student persistence rates.

As mentioned previously, college students are at particular risk to develop PIU and PVP. While there is debate as to whether behavioral addictions exist or not, PIU and PVP are clearly a growing problem. The risk that college students face is increased further by the level of internet access that college campuses make available to students and the policies put in place by administration and faculty that necessitate that students use the internet. College students are spending increasing amounts of time online accessing classes and college services and that trend is increasing (Brosnan & Hinvest, 2012; Celik, Atak, & Basal, 2012; Mehroof & Griffiths, 2010).

The accumulation of all these factors puts college students at higher risk to develop PIU and PVP and constitutes a set of circumstances that is not easy to remedy. The reason that there is not an easy solution to PIU and PVP for college students is that traditional treatments for addiction problems start with the removal of the source of the addiction. In today's society, and the way college campuses function, the withdrawal of internet access from any student appears to be an unrealistic option. Because of this, and the fact that most administrators and teachers are unaware that the problem exists, research in this area is of vital importance.

Problem Statement and Purpose

College students are at higher risk to develop PIU and PVP than the average person and that risk may negatively impact their college success (Fortson, Scotti, Chen, Malone, & Ben, 2007; Hart et al., 2009; Jelenchick, Becker, & Moreno, 2012). Possibly, higher education policies and procedures may contribute to an increase of the problem. Understandably, administrators are largely unaware of the potential problem of internet addiction as there is a lot of controversy surrounding the topic of behavioral addictions in the professional community (Campbell et al., 2006; Decker & Gay, 2011; Munoz-Rivas, Fernandez, & Gamez-Guadix, 2010) and whether they exist. Additionally, since students with PIU and PVP are not violating policies, they are not being identified as having a problem through the student conduct process like other students with problems such as alcohol abuse. Lack of identification of students with PIU and PVP is another reason many administrators are unaware of the potential problem.

Research on PIU is still in its infancy and the research on PVP is even more limited (Brosnan & Hinvest, 2012; Widyanto, Griffiths, & Brunsden, 2011). The majority of the research in this area has been completed in other countries, especially countries in Southeast Asia where they have the best structure supporting the internet and a greater percentage of homes have high speed internet. Problematic internet use and PVP are growing problems that many people are unaware of with no agreed upon definition, diagnosis or treatment. In the United States, the few studies completed have indicated that 9% to as many as 43% of university dropouts exhibited excessive internet use (Yuen & Lavin, 2004). The conducting of research on PIU and PVP in the United States is vital in order to evaluate the extent of the problem in this country. There has been little research conducted on PIU and PVP in the United States and almost none that focuses on American college students. Since adolescents and young adults are

6

at a more vulnerable age (Canan, Ataoglu, Nichols, Yildirim, & Ozturk, 2010; Ferraro, Caci, D'Amico, & Di Blasi, 2007; Israelashvili et al., 2012; Liberatore, Rosario, Colon-De Marti, & Martinez, 2011; Yen, Yen, Chen, Chen, & Ko, 2007), the college population is an ideal group to study.

The main purpose of this study was to determine the extent that PIU and PVP exists in residence halls on college campuses. PIU and PVP are considered by many to be a behavioral addiction although PIU and PVP are not yet recognized in the DSM-V. The scholarly literature shows PIU and PVP to be a growing problem and that adolescents and college students in particular are at a higher risk to develop PIU and PVP. Compounding the problem is the current state of college campuses that provide and encourage students to use the internet. The use of technology on campuses and in education is going to keep increasing (Brosnan & Hinvest, 2012; Nalwa & Anand, 2003).

Prior to the year 2000, studies showed living on campus to be the biggest factor in determining college persistence, partly because of the increased social interaction amongst with peers outside of the classroom (Astin, 1993, 1999). As the internet becomes more and more integrated into college life, more students will be using the internet more often and more students will exhibit problems related to internet use. The increase in internet use can decrease real life social interactions, which has been shown to be a major factor in student persistence. What this means for administrators is that ignoring this problem could negatively affect graduation rates due to decreasing social interaction amongst peers, particularly in residence halls.

The review of literature in this area indicates a gap in the research. High school and college students have been studied most often; however, those studies have been relatively limited in scope and number with only a few conducted in the United States (Fortson et al., 2007;

7

Hart et al., 2009; Jelenchick et al., 2012; Mitchell, Sabina, Finkelhor, & Wells, 2009; Tokunaga, 2013). In addition, none of these studies have been conducted in residence halls, which prior research has indicated is the most important factor affecting college graduation rates (Chickering, 1974).

Problematic Internet use and PVP are behavioral addictions and traditional treatments for addiction start with the removal of the source of the addiction. When looking at this problem from the perspective of a college administrator, there are several reasons this is not a viable option. The internet is deeply ingrained in the college setting and provides too many benefits to consider removing or even reducing access to the internet. Faced with shrinking budgets and increasing accountability, online classes and virtual libraries are a necessity now, not just a convenience or fad. Researching this topic and finding realistic solutions are crucial in order for college administrators to make effective decisions in policy making. The addiction syndrome theory will be discussed and presented as the theoretical framework through which to interpret the findings.

Theoretical Framework

Addiction experts have found the defining of addiction to be a challenge, along with how addiction develops. Currently, there is no way to determine why one person becomes an addict while another does not. Researchers simply do not have a solid understanding of addiction development at this time.

The Addiction Syndrome Theory (AST) explains behavioral addictions, a category of addiction in which PIU and PVP would be classified. Addiction Syndrome Theory is the only current model that can be used to explain all addictions, including behavioral addictions. It is for these reasons that the AST was selected as the theoretical framework for this study.

The AST is a natural extension of the research that has come before it; this theory attempts to unify previous research into one theory that is capable of explaining addiction and all of its expressions. Previous research has shown evidence of many shared features amongst the different expressions of addiction; these shared features indicate a possible common cause that supports the basis of the syndrome model of addiction.

While all the evidence that has been gathered on addiction over the last several decades supports the AST, there is not yet a gold standard instrument of diagnosis. Because there is no standard diagnostic instrument, focus on the premorbid phase is encouraged in order to determine if a subject has developed an addiction syndrome (LaPlante, Nelson, & Shaffer, 2012).

Appendix E describes the key elements of the addiction syndrome theory. The distal antecedents section shows that a person's biological factors and psychosocial factors combine to explain a person's underlying vulnerability to addiction. In essence, this means that what nature has given a person (biological elements), along with what a person has been exposed to socially (psychosocial elements), determines a person's risk level for developing an addiction syndrome.

In order for an at-risk person to develop an addiction syndrome, they must be exposed to, and interact with, an object of addiction. If that exposure and interaction leads to an immediate, desirable subjective shift, then that person may start repeating this interaction. At this point the person has moved into the premorbid phase and may be at risk for developing an addiction (LaPlante et al., 2012). While in the premorbid phase, people are in danger of moving into the next phase, addiction syndrome. Circumstances can either shift them towards more or less healthy behaviors. If a person exhibits the characteristics of the premorbid phase, and one of the characteristics in the shared manifestations and sequelae area of the diagram, then the addiction syndrome is present in the individual (LaPlante et al., 2012).

One of the gaps in the research on the addiction syndrome model involved a paucity of published research indicating that this model can explain behavioral addictions. One of the goals of this study is to determine if AST may have relevance when explaining PIU and PVP. Therefore, for the current study, the diagram in Appendix E will be modified as can be seen in the diagram shown in Appendix F.

For the purposes of this study it is assumed that college students are exposed to, and repeatedly interact with, the internet by virtue of being a student due to the integration of technology and the internet into higher education. If the student develops PIU or PVP as a result of the interactions with the internet, then, as can be seen in Appendix F, those interactions may produce a desirable subjective shift which will likely lead to social issues, such as deviant behaviors, delinquency and social drift, and psychological problems such as psychopathology and comorbidity.

Research Questions

This study was based on the following research questions:

1. What is the level of online activity among first year college students at a metropolitan university?

2. Is there a relationship between level of online activity and academic performance at a metropolitan university?

Definition of Terms

- Problematic Internet Use (PIU): A behavioral addiction where the internet is the object of addiction.

- Problematic Video Game Playing (PVP): Similar to PIU but theorizes that the video game is the true source of the addiction and the internet is the medium for use of the video game.

- Online Activities: Variable that was measured by the IAT.

- Academic Performance: Variable that was measured by self-reported academic probation status and use of academic resources.

- Freshman Student: Any student who has completed less than 32 credit hours.

Limitations

This study investigated a relatively new problem of which there is little understanding. Research on PIU and PVP is very limited and the majority of the research that has been done has focused on university populations in Southeast Asia. In the US, there is still a lot of debate as to whether behavioral addictions are real. Because of these reasons, this research study is limited to determining the extent that this problem, PIU exists at metropolitan universities. Ideally, this study will help raise awareness of PIU and PVP and thereby provide an impetus for additional research. This study was also limited by the nature of how the information was gathered. Students were self-reporting anonymously and therefore there was no way to verify the accuracy of the information provided by the subjects. This also meant that the information reported may have been skewed due to the circumstances of the individuals at the time of taking the survey. Inaccurate responses can be the result of several bias including social desirability bias and recall bias (La Fleur, 2004).

Summary

Research in other areas of the world has indicated that PIU and PVP are real and growing problems with severe consequences for university students. The US has been slower to recognize the problems of PIU and PVP and, as a result, institutions of higher education are largely unaware that there is a problem. Also, administration and faculty are unknowingly aiding the development and growth of the problem by providing and encouraging the use of the internet. In order to curb the growth of PIU and PVP on campus, research needs to be done in order to guide the treatment of the problem.

CHAPTER 2: LITERATURE REVIEW

Problematic video game play (PVP) has become a significant problem over the last decade. Video games have been around since the 1950's but have become a problem this century due to the development of better technology (International Center for the History of Electronic Games, 2014). This technology has created more powerful computers, faster Internet and more complex and immersive video games. The evolution of college dormitories into residence halls along with the growing use of technology on campuses across the country has created an ideal environment for the development of problematic video game play in college students. How the technology and the residence halls relate to the college student will be presented in the first part of this chapter along with a history of the key components of this study including dormitories, computers, the Internet and video games. These three technologies along with dormitories are the components that have developed to point that some students are at risk to develop problematic Internet use (PIU) and problematic video game play PVP as a result of this development.

The second part of the review of literature conducted in this chapter will look at problematic Internet use (PIU), problematic video game playing (PVP) along with topics relevant to PIU and PVP in college residence halls including online games and why the college student is at higher risk. One of the problems when studying addiction is that addiction has proven to be difficult to define and understand and has meant different things at various times in history (LaPlante et al., 2012). Originally the term addicted was used to describe a person who was dedicated to his/her work. During the twentieth century addiction came to be exclusive to alcohol and chemical dependence. This has led to many misconceptions and therefore a review of addiction will be presented and the controversy revolving around the concept of behavioral

addictions which is at the core of this study. This will lead into the last part of the literature review that will take a closer look at the identified factors of PIU and PVP and how they are connected.

Dormitories and Residence Halls

College dormitories have existed for approximately 7 centuries. During that time dormitories have been used to fulfill different needs depending on the circumstances of the institution that they were being utilized. Students of legendary teachers such as Confucius and Socrates often travelled great distances to study. Because the students were in similar circumstances of needing a place to live, they often ended up living with each other. The added benefit was that the students could continue to learn outside of the classroom with each other (Lucas, 2006).

The first student dormitories at recognized universities appeared in the 1300's. The need at this time was for students to have less expensive and safer housing as their circumstances often meant they were living far from their family home. The first required on campus living was at the university of Paris in 1453 based on the assumption that learning does not need to stop outside of the classroom (Blimling & Miltenberger, 1990).

Over the course of the next 300 years, many universities did not provide student housing. The reason for this is that administrators during this time felt all money should be used to further academics and research. British schools were the exception to this change in views on the need for student housing. During that time, only the British system continued to value dormitories. At British schools, dormitories were still viewed as an integral part of the college learning process. Learning outside the classroom had become a cornerstone at British schools. (Blimling & Miltenberger, 1990). Since America started as a British colony, many of the first universities

14

in America were heavily influenced by the British system of higher education, as the people starting them were often educated in places like Oxford and Cambridge. The British influence along with the lack of cities and the youth of the incoming students meant that dormitories were necessary to house the students as there was no other suitable place for them to live (Thelin, 2011).

Another reason was that the British system was the best fit for the structure of America at that time. When Harvard was established, there were no big cities to put a university and therefore the university could not leach off the resources provided by a city like an abundance of rooms for rent. Students were also much younger as they were going to university after eighth grade due to the fact high schools were not yet established (Thelin, 2011).

Not all of the aspects of the British system were adopted however. Since there was not enough money to provide for any employees other than faculty, faculty had the responsibility of supervising all aspects of their students' lives as well as teaching. It is this responsibility that led to in loco parentis doctrine. However during the 1800's faculty came under increasing pressure to produce new research that left less time for them to supervise their students. This led to a separation between in class and out of class responsibilities for faculty, which was essentially the birth of student affairs (Schroeder & Mable, 1994).

Prior to the 1900's, dormitories in America were designed to provide a quiet place to study and sleep. The twentieth century brought many changes that started an expansion in the number of dormitories and eventually a reshaping of their purpose and design.

By 1918, all children in the United States were required to attend, at minimum, elementary school. Secondary education had seen significant growth by this point as well and although it was not mandatory or available to all, it did increase the number of people that were

prepared to attend an institution of higher education. All these achievements were progress towards balancing who had access to higher education. Now it was not mainly the rich to people who were able to go to college but also those who were capable regardless of monetary wealth (Watson, 2008). By increasing the number of people who had access to higher education, the number of people who attended university also increased.

While enrollment starting increasing slowly, not much changed initially in dormitories. Some of the rules and regulations were starting to relax but things were still pretty Spartan (Stephey, 2014). The start of World War II was also the start of major changes in society and as a result in higher education and college dormitories.

As men were drafted and sent overseas to war, many males that normally would have gone to college were not going. As a result of so many males being gone fighting a war, women were called upon to help replace the men in jobs that still needed to be done. Just as more women were working, more women were applying and being accepted to universities. Because of the culture at this time, more women being in college meant the need to erect more residence halls as mixing men and women in residence halls was considered taboo (Stephey, 2014).

Status quo did not return at the end of World War II. Women did not leave their jobs or college just because the men were back from war. Many continued to work and female enrollment in higher education continued to rise slowly. In addition to this, the GI bill provided access to college to many men who would not have otherwise considered it (Center for Education Statistics, 1993). This caused a spike in enrollment that resulted in a need for more dormitories.

While there was a little drop off in enrollment in higher education after the effects of the GI bill passed, shortly after that drop off came the baby boomers. The spike in births shortly

after World War II ending resulted in a large generation who graduated high school around the beginning of the 1960's. Enrollment in higher education rose at unprecedented levels (Center for Education Statistics, 1993).

The flood of baby boomers, both male and female, and the increase in the number of resulting dormitories, forced discussions on how best to staff all of these residence halls along with how best to design them to meet all of these new needs. The rules that governed dormitories had gradually become less restrictive over the first six decades of the twenty first century ("History of the College Dorm," 2012). Students were not just sleeping in dormitories anymore but were spending more time socializing and hanging out with each other. Because of the cultural changes and flood of spending due to greatly increased enrollment, student affairs professionals were forced to adapt. This period provided a great opportunity and dormitories were once again starting to be considered an extension of the learning that was conducted in the classroom. Students spent a small fraction of the day in class and the dormitories were a previously unutilized tool to extend the learning experience (Palmer et al., 2008). This is the beginning of the change from dormitories to the concept of residence halls.

All of this growth and development of residence halls led to a proliferation of research on the college student and where they live. Many studies were done in the sixties and seventies looking at college students' needs and how residence halls could be utilized to help meet those needs. Arthur Chickering started to produce some pioneering research on the college student and where they live during this time period. Chickering's research was followed by Astin, Pascarella, Terenzini and others (Palmer et al., 2008). This research helped shape the evolution of the dormitory of the past to the modern day residence halls that feature private bedrooms.

The results of this golden age of research indicated that students who do not live on campus and commuted to school did not do as well academically as students who lived on campus in residence halls. Research has consistently revealed that living in residence halls with residence life staff does increase a student's chances of graduating (Blimling, 1989; Chickering, 1974; Pascarella, 1985; Pascarella & Terenzini, 1991; Tinto, 1993).

Astin's (Astin, 1993, 1999) research helped further these initial findings by determining that of particular importance to graduating is the freshman year. Astin's work also helped provide some reasons as to why living on campus was beneficial to students. Living on campus was found to increase opportunities to participate in activities outside of the classroom. These activities led to greater social interactions with peers and a feeling of connectedness with the university.

The results from the period of research mentioned above has helped determine what college students need from a residence hall to be successful, leading to many initiatives like mandatory on campus living for freshman along with freshman year experience programs. While the research has determined some of the needs of students, these needs do not always match the student's wants. It is the wants of the students that have led to more and more residence halls where students have all the conveniences of home (Stephey, 2014).

One of the wants that students have is to have their own room with high speed Internet access. It is common for students to have their own room at home and many homes now have high speed Internet ("Key Milestones," 2014). With the growth of online classes and other services that colleges provide online, Internet access everywhere is seen as a standard practice by both students and administrators.

Computers, the Internet and Video Games

Computers, the Internet and video games are the three areas of technology that have developed to the point that some people are at risk to develop PIU and PVP. Computers are at the core of this trinity of technology. Without computers the Internet and video games would not exist. However, all three technologies are closely related and each technology helps fuel the development of the other. For example, video games are a multi-billion dollar industry that is constantly pushing the limits of the computer industry that causes development of more powerful computers. The more powerful the computers, the more data that can be processed which allows for better graphics and content in the video games. The more data that can be processed also drives the need for faster Internet service to help that data flow from the servers to the computers that people play video games on.

Computers

Before the Internet or video games could exist there first had to be computers. Starting in 1936 and up until the 1950's, computers were built using vacuum tubes. These machines were incredibly large with one computer filling one floor of a building. Vacuum tube computers were very limited in what they could do and were only useable by a very few people who were well above average intelligence (Computer History Museum, 2006).

In 1947, the transistor was invented and solved all the problems that vacuums had. They were small, efficient and easy to keep operable. The main problem with the transistor was that they needed to be soldered together in order to be used. The more complex the circuit the more soldering and therefore the major limitation of the transistor was that there was a limited amount of soldering that could be done to a circuit (Computer History Museum, 2006).

In 1958, the first integrated circuit or computer chip was developed. The chip is essentially a collection of small transistors that can be connected together during the manufacturing process. This meant that large amounts of transistors no longer had to be soldered together as was previously needed. This saved space and sped up the processing speeds as the electrons did not need to travel as far (Computer History Museum, 2006).

International business machines (IBM) formed in 1953 and was able to harness the potential of the computer chip. The machines were much larger than modern standards but were exponentially smaller than vacuum computers. Mainframe computers were too expensive and large to be marketed to the average consumer. They were also still difficult to use. Although you no longer had to be a genius to use one, you still needed a high amount of training (Computer History Museum, 2006).

Steve Jobs and Steve Wozniak developed the first Apple II computer in the early 1970's and thus the start of computers geared to the average household consumer. While not exactly easy to use, the size was small enough to put on a desk and the price was $1298. This was expensive but affordable to wealthier people. International Business Machines started to build its personal computer (PC) shortly after which was also marketed to the home consumer (Computer History Museum, 2006).

Nineteen eighty-four saw the release of the first generation of the Macintosh that was the first computer with a graphical interface and a mouse. This made computers easy for the average person to use and sales soared. IBM followed quickly with a similar device and the start of the PC vs. Apple debate began (Computer History Museum, 2006).

Since the first computer chip was created, the performance of chips has doubled every two years. This observation is often referred to as Moore's law and the exponential growth has

continued until the present day that has increased the capabilities of computers exponentially along the way (Intel Corporation, 2014). The net effect is better technology has gotten cheaper every year for the household consumer. Cheaper means more people can afford to have a computer. In 1984, approximately 8 percent of households had a computer. By 2010, almost 77% of households had a computer (File, 2013).

The increase in the number of household computers is also reflected in Figure 1 that shows the rise in use of computers. Computer use has doubled since 1990. Figure 2 shows a demographic breakdown of who uses of computers. Figure 2 also shows the importance of technology getting cheaper as household income is the biggest determining factor to computer use. If the technology and by extension computers had not gotten cheaper then computer use would not have expanded as quickly.
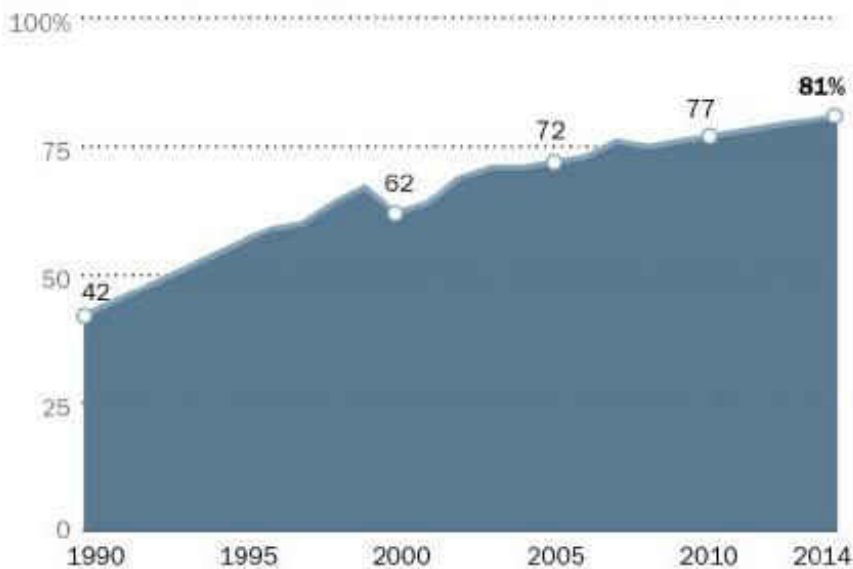
Figure 1: Computer Use, 1990 – 2014. Percentage of American adults who use computers

	Use computers
All adults	81%
Sex	
a Men	80
b Women	81
Race/ethnicity	
a White	83[c]
b African-American*	77
c Hispanic	71
Age group	
a 18-29	89[d]
b 30-49	86[d]
c 50-64	84[d]
d 65+	56
Education level	
a High school grad or less	66
b Some college	89[a]
c College+	94[ab]
Household income	
a Less than $30,000/yr	65
b $30,000-$49,999	84[a]
c $50,000-$74,999	92[ab]
d $75,000+	96[abc]
Community type	
a Urban	81
b Suburban	81
c Rural	79

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Figure 2. Computer Users in 2014 – Demographics

As discussed above, computers have continued to become faster and less expensive since they were first developed. This has led to most university students now having their own computer while at school and all students having access to a computer. This is shown in Figure 3 with high percentages of students having either a laptop or a desktop. While some will have both a laptop and a desktop, not all will and therefore it is likely well over 90% of students have

22

at least one, possibly even 100%. Realistically, it is unlikely that anyone could even apply for acceptance to a university today without access to a computer much less graduate.

	All adults	Non-students, 18-24	Undergrads	Grad students	Community College
Cell phone	82%	89%	96%	99%	94%
Desktop computer	60	58	59	73	67
Laptop computer	52	64	88	93	70
iPod or mp3 player	45	69	84	86	72
Game console	41	64	58	49	61
e-book reader	5	4	9	7	4
Tablet computer	4	4	5	5	4

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Figure 3. College Student Computer Ownership

Internet

Although the Internet had not been envisioned in 1960, the first key development that allowed for it was created during this year. AT&T designed the first modem with the purpose of converting digital information to analog signals that could be transmitted via telephone lines to another receiving computer. This computer, also equipped with a modem, would receive and translate the analog signal back to digital for the receiving computer to use. While this first modem was not very effective, it laid the basis for connecting two computers and allowing them to communicate with each other over long distances (Computer History Museum, 2006).

The first person to actually envision and write about the Internet was a man called J.C.R. Licklider and in 1962 he became the first head of computer research at the Advanced Research Projects Agency (ARPA). The ARPA was created to advance science in theoretical areas that

were beyond today's needs in order to prevent the United States from being surprised by a would be enemies technology (Leiner et al., 2012)

Soon after, funding was approved to set up the first two nodes of what was to be called ARPANET. The first node site was at UCLA and the second node site was at Stanford. The first node-to-node connection was made on October 29th, 1969 (Computer History Museum, 2006).

For the next few years, nodes are added to ARPANET at the rate of one per month. Software and technology are continually refined and in 1972, software was developed that allows for the transfer of electronic mail across ARPANET. In 1973, the first two international nodes are added to ARPANET in England and Norway; ARPANET continued to grow until 1983 when it was split into ARPANET, which contained the civilian nodes, and MILNET that contained the military nodes. Later, ARPANET would be renamed the 'Internet' (Leiner et al., 2012).

In 1985, the National Science Foundation linked five supercomputers from across the United States together. This provided the backbone for the Internet to grow further. Each supercomputer acted as a hub for surrounding smaller networks to connect to and there by connect to all computers that were connected to all the supercomputers. This allowed anyone with a computer and a modem to connect to all these interconnected computers and networks, allowing for the sharing of information and resources (Leiner et al., 2012).

Traffic on ARPANET continued to increase and so did funding to increase the access points and also the bandwidth. Companies like American Online start providing services to allow homes to connect to the Internet easily while also providing people with other services such as email. The increase in infrastructure and speed was not limited to America. The Internet had truly become international as more countries developed their own infrastructures. All these

networks started to connect and the Internet grew like no other technology before it ("Key Milestones," 2014).

In 1991, the Internet was approximately 100 times faster than it was initially with over 100 countries connected and over 600 000 hosts. By 2002, there were over 500 million people connected to the Internet. This number more than doubled by 2006 with over 1 billion people connected ("Key Milestones," 2014). This growth in the use of the Internet is reflected in Figure 4 that shows the growth of Internet use in America. Figure 5 shows some demographics on who is using the Internet. As with computers, income is a big factor but going to college is also a big indicator as to who uses the Internet.
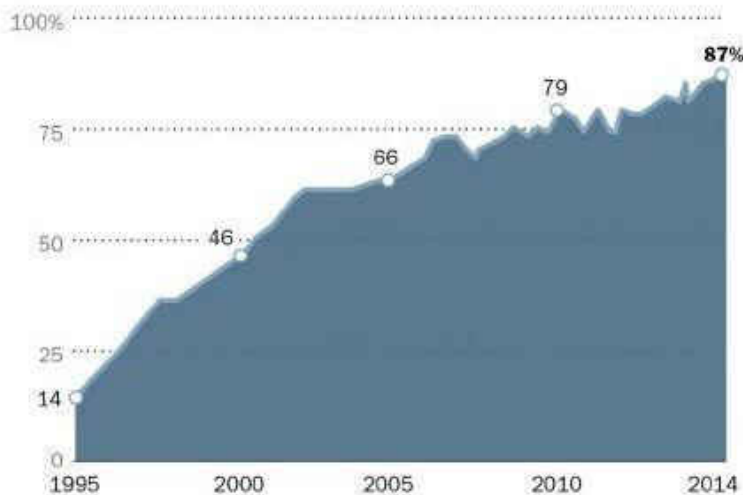
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Figure 4. Internet Use by Americans, 1995 – 2014

The speed of these connections and the Internet itself made access fast and the infrastructure made connections reliable. The Internet is now seemingly endless and has changed almost everything in our society. In terms of this study, the most important change in our society has been the complete adoption of the Internet in higher education. Applications, grades and even classes are now online. So complete is the adoption of the Internet by higher education that students would likely be unable to graduate without access to the Internet.

	Use internet
All adults	87%
Sex	
a Men	87
b Women	86
Race/ethnicity*	
a White	85
b African-American	81
c Hispanic	83
Age group	
a 18-29	97^{cd}
b 30-49	93^{d}
c 50-64	88^{d}
d 65+	57
Education level	
a High school grad or less	76
b Some college	91^{a}
c College+	97^{ab}
Household income	
a Less than $30,000/yr	77
b $30,000-$49,999	85
c $50,000-$74,999	93^{ab}
d $75,000+	99^{ab}
Community type	
a Urban	88
b Suburban	87
c Rural	83

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Figure 5. Internet Users 2014 – Demographics

Video Games

The first documented use of a computer for a video game was in 1940, just four years after the first computer was created. Edward U. Condon designed the computer to play a game called Nim for the world fair. Later in 1947, a patent was filed for a "cathode ray tube amusement device". Still later, in 1952, A. S. Douglas created a digital game of tic-tac-toe in order to support his research on his dissertation on human-computer interaction (International Center for the History of Electronic Games, 2014). All of these games, and some others not as well known, set the ground work for using computers for playing games.

Once computers evolved from vacuum tubes to transistors and computer chips, computers became much easier to program. Computers also became much smaller and numerous. Video games were developed as a hobby at this point as access to computers was still limited mainly to people at universities and research facilities (Public Broadcasting System, 2014).

In 1967, the first video game was written and designed to be played on a television set. The game came in a box that plugged into a TV and was the first video game console, although it never made it to market. The first home video game console that was actually sold to the public was the Odyssey, which was released by Magnavox in 1972 (International Center for the History of Electronic Games, 2014). At this time computers were still too big and expensive for the vast majority of households. The gaming console brought video games to households as they were much more affordable and much simpler than computers to use. Arcades and home consoles during this time period introduced video games to a much larger audience then previously had been exposed.

In 1977, the Video Computer System (VCS) was released by Atari and later was renamed the Atari 2600. Sales were slow at first but eventually this system made video game players out of millions of people (International Center for the History of Electronic Games, 2014).

Shortly after the release of the Atari 2600, the golden age of arcade games began. In 1978, a game called Space Invaders was released and was incredibly successful. This created a lot of publicity for video games with many articles written based on this game and even some time on television news programs. The effect was to help bring video games into the mainstream and arcades became more numerous and profitable (Kent, 2001).

By 1982, the video game industry was generating close to $12 billion in revenue with arcade games collecting $8 billion in quarters and the home industry collecting another $4 billion in game and console sales. To provide a little perspective, this revenue is approximately three times the amount that pop music generated that year and four times the amount movies generated that same year (Rodgers & Larsen, 1984).

In 1984, Apple released the Macintosh that was very user friendly and small enough to fit on a desk. This made computers a much more viable and practical purchase for many households (Levy, 2000). Over the next decade, computer technology advanced exponentially in accordance with Moore's law. These advances translated into smaller, faster computers and gaming consoles with continually improving graphics and sound (Intel Corporation, 2014).

The computer industry continued to have exponential growth and home gaming became more and more popular. The combination of computing power along with the growth in the availability and speed of the Internet made the release of a game called EverQuest in 1999 possible. This is the game that brought the massive multiplayer online role-playing game (MMORPG) to people on a worldwide scale (Peckham, 2012).

The current generation of MMORPG's started in 2004 with the release of World of Warcraft (WOW). In 2011, WOW had a greater than 50% market share with more than 10 million subscribers worldwide (MMOData, 2013). World of Warcraft is the highest grossing game of all time and is making more money daily (Douglas, 2012).

Massive multiplayer online role-playing game's ability to keep players playing lies in the fact that it never really ends. There is always something else to do in the game as the game is very complex with expansions always in development. It is like a book or movie that never ends. The difference being that the user controls how to interact with the story. The virtual world is vast and allows players to interact with artificially intelligent creatures and real humans alike. This style of game redefined how people played and related to one another (International Center for the History of Electronic Games, 2014).

While sales and revenue are good indicators of popularity and usage, there is a statistic that is tracked which is better in terms of indicating excessive game play. DFC Intelligence is a research and consulting firm focused on the gaming market. One of the aspects of gaming that they monitor is hours played per game. A report from DFC released in 2012 indicated that a game called League of Legends more than doubled the usage of World of Warcraft for the prior six months. During that six month time span League of Legend players logged close to 1.3 billion hours played while Warcraft players, second on the list, logged a little over 622 million hours (Lemon, 2012). This information was garnered from players who use a freeware service called Xfire, so while it is indicative of the overall trends as a whole, it does not show total hours played by every player worldwide, only a fraction of the total.

Currently the video game industry generates 68 billion dollars in revenue and that number is projected to go up in the future. Forecasts project revenues to get up to 96 billion by

2018 (DFC Intelligence, 2014). As long as technology continues to improve, video games will continue to get more immersive.

As mentioned previously, universities have completely adopted the use of the Internet. Residence halls all now have high speed Internet access. Most students have their own powerful computers to use whenever they want. Therefore students have 24-hour access to these online games that are incredibly immersive.

Also mentioned previously is the golden age of research in student affairs which showed that students that live on campus graduate are higher rates than commuters. Part of the reason for this was found to be that students that live on campus socialize more with their peers outside of class and become more engaged and connected at the university. Single rooms with high speed Internet access along with students having their own computers playing immersive games may be a barrier to this socialization and therefore graduation.

<p align="center">College Student Development</p>

The addiction syndrome model is based on decades of research into addiction. The model suggests that biological elements along with psychosocial elements can combine to put a person at risk for developing an addiction syndrome. Exposure to an object of addiction when a person is at risk can lead to repeated behavior and eventually addiction (LaPlante, 2012).

When looking at the addiction syndrome in college students it is useful to gain a better understanding of who the college student is and what they are going through. Fortunately there is several decades worth of research available based on understanding the college student. All this research started shortly after access to education was increased beyond white males who could afford the price tag of a college education.

Once access increased there was a greater need to understand who was going to college and what they were going through. Gaining this understanding was used to increase retention rates and therefore graduation rates.

The main areas of research that are relevant to this research are cognitive development, moral development and psychosocial development. What the research has shown is that the traditional college student is going through a stage of transition and exploring their identity (Chickering, 1993). Socializing and experimentation are major factors in their exploration.

This is important as research in the area of PIU and PVP indicates that PIU and PVP can be a barrier to this stage of development in college students as it restricts real world socialization which can lead to feelings of loneliness (Campbell, 2006; Junghyun, 2009; Kalkan, 2012; Lo, 2005; Whang, 2003). This can have negative and lasting effects on some students.

Access to higher education and the importance of socialization will be reviewed first. After that a review of the top models under the categories cognitive development, moral development and psychosocial development will be presented.

Access

From the beginning of higher education in the United States until the start World War II universities and colleges saw little change in the population that they served. College students during this time were almost exclusively white males from middle to upper classes (Kinzie, 2004).

Area of Change	1636–1940s	1950s–1970s	1980s–Present
Access	Mostly white male students from high and middle socioeconomic status	Increasing diversity in student body: more females, more students of color	Minorities; athletes; academically proficient, economically disadvantaged, adult and part-time, out-of-state, international, online students
Admissions office practices	N/A	SAT; open access, open-door policies, targeted marketing, active recruitment of students of color	Complex, computerized admissions processes, early decision, early admission deadlines, targeted financial aid (including loans)
Desirable institutional characteristics	Campus beauty, athletic reputation, president's reputation	Prestige, cost, location	Rankings, endowment
Percentage of high school students who entered college	Less than 20 percent	About 50 percent	Between 70 and 80 percent
Major influences on students' college selection	Parents, peers, reputation	Parents, peers, high school counselors, cost	Parents, peers, cost, rankings, prestige, financial aid
Catalysts, historical events	Founding of institutions	GI Bill of 1944, Higher Education Act of 1965, mandatory desegregation, 1972 federal amendments	Calls for accountability, decreased funding

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Figure 6. Access to Higher Education

World War II saw a lot of traditional college students going to fight in the war and this opened up spaces for more females to attend. At the end of the war, the GI Bill provided financial assistance to veterans for the purpose of attending college. This provided access to college for many people who traditionally would not have had the opportunity to seek out a college degree (Thelin, 2011).

Access to higher education increased further as more federal student loans and grants became available. These changes in access are represented in Figure 6. The effect is that enrollment numbers in higher education have been increasing for decades. The decade from 1998 to 2008 saw a 32% increase in college enrollment with total enrollment at 19.1 million. This trend is expected to continue with projections of enrollment numbers reaching 20.6 million by 2018 (Renn, 2013). Figure 7 shows the demographic changes in enrollment which also shows that access to education has continued to grow.

As college enrollment continues to grow this means that a growing number of students will be put at risk to develop PIU and PVP. The students that do develop PIU and PVP are unlikely to graduate. College administrators are in the best position to address this issue and doing so has the benefit of helping students graduate and increasing revenue for the institution by decreasing dropouts.

	1976		2000		2008		Percentage Change, 1976 to 2008
	Total Enrollment	Percentage of Enrollment	Total Enrollment	Percentage of Enrollment	Total Enrollment	Percentage of Enrollment	
Total Undergraduates	9,418,970	100.0%	13,155,393	100.0%	16,345,738	100.0%	73.54%
Women	4,521,106	48.0%	7,380,175	56.1%	9,300,725	56.9%	105.72%
Men	4,897,864	52.0%	5,775,218	43.9%	7,045,013	43.1%	43.84%
African American and Black	943,355	10.0%	1,548,893	11.8%	2,269,284	13.9%	140.55%
American Indian and Alaska Native	69,729	0.7%	138,506	1.1%	175,552	1.1%	151.76%
Asian Pacific Islander	169,291	1.8%	845,545	6.4%	1,117,865	6.8%	560.32%
Hispanic	352,893	3.7%	1,351,025	10.3%	2,103,524	12.9%	496.08%
White	7,740,485	82.2%	8,983,455	68.3%	10,339,216	63.3%	33.57%

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Figure 7. Enrollment Numbers and Demographics

Socialization

Socialization has been identified as a key to student success (Astin, 1993; Astin, 1999). Students living on campus have more opportunities to socialize with their peers outside of the classroom which is the main factor leading to a student graduating. The importance of this in relation to this research is that PIU and PVP are barriers to student socialization and therefore PIU and PVP can be a barrier to student success.

Knowing this, the concept of socialization is understandably integral to several of the theories designed to explain how college students develop and adapt to the college environment. When students enter college they face a disruption in their support networks that they had in place at home. These support networks had previously been where they gained the information needed to grow their perceptions of themselves while providing a certain amount of consistency and stability. The grounding effect of their support network is essentially gone as they move away from home for the first time (Renn, 2013).

The importance of socialization and the difficulty of transitioning to college can be seen in the amount of research that focuses on first year students and the programs that have been put in place as a result of the research. The basis of the research is that moving from home and established support networks can put a lot of stress on students which can disrupt their psychological well-being. Normally their support network would be used to help ease the impact of the stress but, as mentioned above, the support networks are either no longer there or harder to access. This has led to the development of the many first-year experience programs which attempt to get students to socialize upon arrival, or before, in an effort to ease the transitional issues that leaving home for college brings with it (Renn, 2013).

Research on student development started in the 1960's and some ground breaking theoretical models were developed to help understand the moral, cognitive and psychosocial development of college students. In the 1990's researchers started to borrow from the research that had been done in the psychology and sociology fields. Psychosocial identities were identified as a key factor in college student development and research in this area has continued to develop (Renn, 2013).

Student development theories can be categorized into cognitive, moral or psychosocial identities. Research has shown that student growth can be categorized into one of these three divisions which aids in comparison. Looking at the models that have been developed in each of these categories gives a basis for understanding how college students develop in different areas. Each area is important when considering student development and they have led to holistic models which incorporate components from each of the following three categories.

Psychosocial Development

General psychosocial identity development theories provide the basis for student identity development. Erikson's Identity Development Theory is one the most prominent theories and covers a person's lifespan. Erikson's theory has eight stages which are based around psychosocial crisis which are brought on by certain levels of development which are closely related to age. According to Erikson, a person must harmonize internal and external tensions. Once a crisis is balanced in a healthy manner then the individual has developed into the next stage (Erikson, 1980).

Stage five, which is titled Identity Versus Identity Confusion/Diffusion, and Stage six, which is titled Intimacy versus Isolation, occur during adolescence and young adulthood and are

therefore the focus for student development researchers as this is the age that deals with traditional aged college students. Stage five is the cornerstone to Erikson's theory and deals with identity development as a person moves from childhood to adulthood. Individuals who fail to balance this identity crisis will lack purpose and will not have a sense of self (Erikson, 1980).

If a person is unable to balance stage five, they will be confused about their identity. This will make the crisis of developing intimate or close relationships more difficult. The result could lead to a feeling of loneliness which could further isolate the individual (Erikson, 1980).

Stage	Time of Life	Crisis and Resolution
One: Basic Trust Versus Mistrust	First year	A crisis occurs when changes in caregiving require the infant to adapt, learning to trust and reciprocate even in the face of unpredictably.
Two: Autonomy Versus Shame and Doubt	Early childhood	A crisis occurs in the course of the child's developing autonomy through walking, talking, and toilet training. Encouragement and patience provide the child with a foundation for self-determination and confidence; a lack of encouragement—or shaming—results in a sense of shame and doubt.
Three: Initiative Versus Guilt	Preschool	A crisis arises out of conflicts between the child's developing conscience and his or her actions, thoughts, and fantasies. Initiative results from the child's imagination, interactions with others, and imitation of others. The development of moral awareness prompts this crisis.
Four: Industry Versus Inferiority	School age	A crisis occurs as children interact with multiple adults and youth, learning skills that are valued by others. A sense of inferiority may result from inadequate encouragement or recognition of a child's ability to contribute. Industry results from a sense of being appreciated.
Five: Identity Versus Identity Confusion/ Diffusion	Adolescence	A centerpiece of Erikson's theory, the identity crisis marks the transition from childhood to adulthood. Inadequate resolution may result from a lack of sense of self or purpose. Identity resolution occurs as individuals establish a durable internal sense of self that is congruent with external recognition from the earlier stages.
Six: Intimacy Versus Isolation	Young adulthood	A crisis arises out of decisions about fusing with others or remaining detached. Healthy resolution leads to intimate relationships and adult friendships. A lack of a strong sense of identity from the previous stage may result in difficulty establishing relationships and isolation.
Seven: Generativity Versus Stagnation	Midlife	A crisis surrounds the desire to contribute to society and future generations through work, parenting, or community involvement. Healthy resolution leads to an individual's satisfaction in regard to his or her purpose and accomplishments. A lack of direction or sense of purpose results in stagnation.
Eight: Integrity Versus Despair	Late adulthood	A crisis occurs as adults face the realities of changing physical and mental abilities and the awareness that death is inevitable. Integrity results from a feeling that one has accomplished something in one's life. Despair and regret arise from feeling that one has not taken advantage of life's opportunities.

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Figure 8. Erikson's Identity Development Theory

While Erikson's theory is more generalized, Chickering's Seven Vectors theory is

designed specifically for college students. Chickering borrowed from Erikson's theory to form

his own theory that was based on information he had collected from colleges. Chickering's Seven Vectors theory is one of the most recognized theories in student development and, despite some possible limitations in application to a more diverse student body, it is still the best place to start when looking at student development in the college setting (Renn, 2013).

Chickering's theory is not based on stages like many other theories. Students can been in different vectors at the same time and can even repeat vectors depending on life circumstances. Although the vectors are not linear earlier vectors are less complex and provide a foundation for later more complex vectors (Chickering, 1993).

The first vector is Developing Competence. There are three types of competence to be developed: intellectual, physical and interpersonal. Intellectual competence refers to the ability to succeed academically. Physical competence refers to the participation in some sort of activity such as sports or stage. Interpersonal competence refers to the development of some leadership skills and the development of relationships (Chickering, 1993).

The second vector is Managing Emotions. This vector refers to students learning how to deal with their emotions in an appropriate manner. Control is the main thing to learn here and that is done by finding appropriate and timely outlets for all of their emotions (Chickering, 1993).

The third vector is Moving Through Autonomy Toward Interdependence. This vector refers to the student learning to take care of themselves on their own. With this confidence in themselves and their independence they are still aware that people are connected to each other and the student's actions can affect others (Chickering, 1993).

The fourth vector is Developing Mature Interpersonal Relationships. This vector refers to a student understanding that healthy relationships require both parties to share themselves in

an intimate way. Appreciating the differences in others and finding value in those differences is important for growth in this vector (Chickering, 1993).

The fifth vector is Establishing Identity. This vector is the cornerstone of Chickering's theory. This vector extends off the four previous vectors and provides a base for the two that come after this vector. In order for a student to progress through this vector they must not only develop a firm understanding of themselves and who they are but also be comfortable with who they are. The development of their self usually involves experimenting with different aspects of their selves and therefore there will likely be a lot of trial and error during this vector (Chickering, 1993).

The sixth vector is Developing Purpose. This vector is about a student gaining some sort of direction in terms of work and leisure life. While some goals should be set things can be considered fluid at this point as a traditional career may not be desirable or attainable at this time (Chickering, 1993).

The seventh vector is Developing Integrity. This vector is split into three categories: humanizing values, personalizing values and developing congruence. Humanizing values requires the student to balance their values with other peoples values. Personalizing values requires the student to deepen their believe in their core values while still respecting the values of others. This should lead the student to develop congruence, where their values shape their actions and their actions balance their interests with the interests of those around the student (Chickering, 1993).

Erikson's and Chickering's theories focus on the development of identity. The development of identity involves experimentation and social interaction with peers. The age group that traditional college student's fall into has been identified as an important transitional

39

time. The transition from adolescence to adult is amplified for traditional college students by their transition to the college campus. These factors put college students at a higher risk to develop PIU and PVP.

When considering PIU and PVP amongst college students, psychosocial development in college students is the aspect that is the most closely related and best able to give a better understanding of the problem of PIU and PVP in college students. When looking at the research conducted on psychosocial development in college students and the resulting theories of psychosocial development in college students, it is clear that a student's identity development is the most important aspect to consider.

<center>Addiction and the College Student</center>

As mentioned previously, the traditional college age student is going through a developmental transition that bridges from adolescence to adulthood. This stage is characterized by experimentation and socializing as a means to help explore their identity. College campuses are a place where students are removed from their parents and the restrictions that they may have had living at home and are now surrounded by peers. Added to this is a flexible schedule that allows for a lot of free time and the results are that "desires to experiment that were previously suppressed, or limited to rare occasions, may be more easily fulfilled in the new, more independent living situation" (Maggs, 1997, p. 348).

The college setting does put students at a higher risk to develop an addiction but addiction can't happen without exposure to a substance or behavior. Alcohol has received the most attention in terms of research on college campuses followed by smoking, marijuana use and to a much lesser extent, gambling (LaPlante et al., 2012). Alcohol, marijuana, and gambling are the most common expressions of addiction on college campuses. While there has been

significant research on these addictions on college campuses, they have all been treated as separate addictions. No one has looked at college students and addiction through an addiction syndrome framework.

Despite this, some addiction researchers have found evidence of an addiction syndrome by looking through college addiction studies and seeing overlapping treatment components. Overlapping treatment components indicate a degree of treatment non-specificity, which is an indicator for the presence of an addiction syndrome (LaPlante et al., 2012).

A review of previous research indicates the possibility of the presence of an addiction syndrome and that alcohol use, smoking, marijuana use and gambling may be expressions of the same underlying addiction syndrome; a gap in the research definitely exists. Future research in this area is necessary to either support or oppose the concept of addiction syndrome.

<center>Internet Addiction</center>

According to the American Psychiatric Association (APA) there is not an officially recognized disorder called Internet addiction. In fact the APA only recognizes one behavioral addiction that is gambling. However other countries, especially countries in Southeast Asia, use the term Internet and video game addiction in their research. As a result, it should be noted that Internet addiction and problematic Internet use (PIU) are used interchangeably and mean the same thing.

The Internet was released to the public in 1992 and grew quickly. As access to the Internet increased, researchers started to notice that some people were spending excessive amounts of time online. Soon after the observance of this type of behavior the term Internet addiction was used and research on the subject began to be published.

Problematic video gaming (PVP) is a sub category of PIU. While research indicated that some people clearly have PIU, the percentages may be smaller than originally indicated. The reason for this is that further research has indicated that the Internet may not be the primary problem but just a medium for the real problem such as online gaming (Brosnan & Hinvest, 2012; Chou, 2001; Griffiths, 2000b; Pratarelli & Browne, 2002; Widyanto et al., 2011). While the majority of the published research in this area has focused on PIU, the research is directly related to PVP that is an extension of PIU.

As mentioned above, addiction has proven to be a difficult term for researchers to define. Internet addiction has been even more difficult to define as there is a divide amongst the researchers as to whether being addicted to the Internet is even possible. Some researchers believe that there is no such thing as a behavioral addiction at all.

Addiction Controversy

Before looking at the controversy over behavioral addictions it should be mentioned that there are many obvious benefits to the Internet. For most people the Internet has brought many conveniences. Although Internet addiction is generally considered a bad thing there may be some benefits to spending excessive time online. Many studies have linked the Internet with depression but it is not clear if the Internet causes depression or if people with depression seek out the Internet for relief. For instance, some chat users indicated that they are less fearful socially and belief the Internet helps them (Campbell et al., 2006).

The Internet allows for some people to express themselves in a way that they can't in the real world thus reducing their social anxiety which may help some people develop social skills they would not otherwise have developed (Lo et al., 2005). The anonymity of the Internet allows

for students to experiment with their identity that can provide valuable feedback (Ceyhan, 2010; Israelashvili et al., 2012).   Adolescents may spend many hours on the Internet trying to better understand and build a clearer definition of themselves and those whose self is not yet clearly defined may use the Internet more than those who do have a clear sense of themselves (Israelashvili et al., 2012). Anonymity can also be beneficial as Internet relationships could in some cases be healthy as they can break through bias (Griffiths, 2000a). Massively multiplayer online games can help adolescents develop their identity by allowing them to explore who they want to become (Ceyhan, 2010; Li, Liau, & Khoo, 2011). Some researchers framed the issue as a tradeoff, losing in some areas of life but gaining in others (Kuss, Louws, & Wiers, 2012). One example of this would be that video games are something you do whereas TV is something you watch and Internet addicts tend to watch less TV (Leung, 2004).

Other researchers explored the possibility that playing World of Warcraft (WOW) online with real life friends would lead to a better balance between online and offline time. Previous research indicated that the social aspects of MMORPGs put people at higher risk to have problematic use. It is unclear how online socializing contributes to problem play. Since immersion can lead to a sense of the game seeming 'real' and cause excessive play, researchers felt it was logical to assume that playing with real world friends would help keep the players connected to offline life and limit problematic online play. Results indicated a negative correlation between problematic MMO play and playing with real life friends. The qualitative portion supported this finding and also suggested that playing online with real life friends can enhance real life relationships. Therefore, immersion seems to be moderated by play with real life friends (Snodgrass, Lacy, Francois Dengah, & Fagan, 2011).

Despite these possible benefits, there are some people who are not benefiting from the Internet. There are a growing number of people who play video games and using the Internet excessively although there is a lack of agreement on how problematic video game play (PVP) and problematic Internet use (PIU) should be measured. Early studies used seemingly arbitrary numbers, such as 38 hours or more online per week, to define various levels of use which makes direct comparisons with those studies difficult.

In an effort to move toward a method of accurately diagnosing PIU some researchers have developed instruments based on the criteria for pathological gambling (Fortson et al., 2007; King, Delfabbro, & Zajac, 2011). Others have used the definition of substance addiction and replaced the word substance with Internet and found many similarities (Ng & Wiemer-Hastings, 2005). Despite these efforts there is still no agreed upon definition for PIU or PVP (Israelashvili et al., 2012; Oggins & Sammis, 2010) and there is no universally accepted way to diagnose PIU and PVP (Munoz-Rivas et al., 2010). The lack of an agreed upon definition and the controversy surrounding behavioral addictions has led to the terms PIU and Internet addiction disorder (IAD). These terms are usually talked about in terms of a specific online activity such as online gaming PVP (Snodgrass et al., 2011). These two main frameworks for diagnosing Internet abuse have the following criteria: IAD which has mood modification, withdrawal symptoms, relapse, salience, tolerance and conflict as the core components and PIU which requires 5 of the 8 following criteria to be met - need for more time online, withdrawal when time online is reduced, environmental distress, mood modification through Internet use, preoccupation with the Internet, repeated attempts to reduce Internet use, time management problems and deception about time spent online (Leung, 2004). Since addiction requires the following characteristics: mood change, withdrawal symptoms, relapse, salience, tolerance and conflict (Smahel, Blinka, &

Ledabyl, 2008), the criteria for PIU and IAD strengthen the argument that excessive Internet use can be classified as an addiction.

While some disagree that behavioral addictions exist, and the subdivision of technological/Internet/gaming addiction (Campbell et al., 2006; Decker & Gay, 2011; Dowling & Brown, 2010; Fioravanti, Dettore, & Casale, 2012; Fortson et al., 2007; Griffiths, 2000b; Israelashvili et al., 2012; King et al., 2011; Leung, 2004; Mann Hyung, 2006; Munoz-Rivas et al., 2010; Pratarelli & Browne, 2002; Saville, Gisbert, Kopp, & Telesco, 2010; Smahel et al., 2008; Smahel, Brown, & Blinka, 2012; Song, Larose, Eastin, & Lin, 2004; Wang, 2001), behavioral and chemical addictions are very similar and with the advancement of the Internet and computer games has come technological addictions. Opponents of behavioral addictions believe that proponents of behavioral addictions are overlooking the primary problems and labeling secondary problems as addiction (King et al., 2011; Oggins & Sammis, 2010). Opponents also question whether it is possible to be addicted to anything but a chemical (Wang, 2001). Following the line of thinking, Kandell proposed that if you treat the underlying psychological problem the balance will return and the Internet addiction will resolve itself (Ya-Rong, 2006).

Proponents of behavioral addictions believe that behavioral and chemical addictions share the same core components: salience, mood modification, tolerance, withdrawal, conflict and relapse (Decker & Gay, 2011; Ferraro et al., 2007; Griffiths, 2000a, 2000b; King et al., 2011; Munoz-Rivas et al., 2010; Snodgrass et al., 2011; Song et al., 2004). Many researchers feel IAD/PIU is similar to other addictions and that the term addiction should not be limited to problem behavior that involves the taking of chemicals (Ferraro et al., 2007; Griffiths, 2000b). While some researchers such as Goldberg believe that Internet addiction does not exist, Young has done research which supports the idea that Internet addiction is a real thing and Griffiths and

45

Scherer have done further research which supports Young's findings (Wang, 2001). Young believes that Internet addiction can be just as damaging as substance addiction and some studies have shown that Internet addicts exhibit many of the same symptoms and behaviors as those who are chemically addicted (Leung, 2004). The development of better technology to scan the brain has led to evidence that some behaviors can affect chemicals in the brain similarly to the way that chemical do (Oggins & Sammis, 2010).

Although the American Psychiatric Association does not officially recognize Internet and video game addiction, studies have indicated that 50-65% of players report being addicted to their preferred game (Lin, Ko, & Wu, 2011; Oggins & Sammis, 2010; Snodgrass et al., 2011). A different study showed over 40% of subjects reported being addicted although only 6% actually scored as addicted on the instrument used in the study (Oggins & Sammis, 2010). Overall, the research has indicated a range of 28-50% of subjects meet the criteria for mild to moderate internet abuse and 4-22% meet the criteria for severe internet abuse (Campbell et al., 2006; Fortson et al., 2007; Israelashvili et al., 2012; Lin et al., 2011; Wang, 2001).

Whether PIU and PVP are actually addictions is debatable. What is not debatable is that there is a problem and it is growing. College age students are vulnerable to PIU and PVP for several reasons mentioned previously. This may be having a negative effect on graduation rates of students living in residence halls and this problem will only grow if left untreated. There is a currently no research done on college students living in residence halls.

Growing Problem

The Internet is becoming more and more accessible as a result of its exponential growth and a side effect is that Internet addiction is a growing problem in developed countries (Cam & Isbulan, 2012; Ceyhan, 2008; Israelashvili et al., 2012; Jong-Un, 2007; Moraham-Martin &

Schumacher, 2000; Saville et al., 2010; Smahel et al., 2012; Stieger & Burger, 2010; Yuen & Lavin, 2004; Zhang, Amos, & McDowell, 2008). Research on the topic has been done in Spain (Munoz-Rivas et al., 2010), Hungary (Koronczai et al., 2011), Queensland (Wang, 2001), Greece (Siomos, Dafouli, Braimiotis, Mouzas, & Angelopoulos, 2008), Taiwan (Chou, 2001; Ko, Yen, Yen, Lin, & Yang, 2007) and China (Huang et al., 2009; Lam, Zi-wen, Jin-cheng, & Jin, 2009; Lei & Wu, 2007; Li, Wang, & Wang, 2008; Shi, Chen, & Tian, 2011) among others. Affected students in all these countries have shown a decrease in academic performance and a lack of interest in anything else besides what they do on the Internet.

South Korean Internet use has also grown rapidly with some studies showing that between 1999 and 2005 Internet use tripled (Cho, Kim, Kim, Lee, & Kim, 2008; Jang, Hwang, & Choi, 2008; Lee et al., 2007; Mann Hyung, 2006; Park, Kim, & Cho, 2008; Sujin, 2010). With one of the most advanced Internet infrastructures in the world, South Korea is experiencing a rise in Internet addiction to the point that the government has developed a boot camp to cure kids with Internet and online gaming addiction (Koo, Wati, Lee, & Oh, 2011).

The Internet has grown into an essential part of everyday life and as people gain greater access to the Internet more people are becoming addicted to it (Nalwa & Anand, 2003). Although the Internet is an important tool for our daily lives, with an estimate of 9 million Americans being Internet addicted, this is a growing concern as the Internet will only become more ingrained into our lives in the future thus exposing more people to the risk of Internet addiction (Byun et al., 2009; Jelenchick et al., 2012).

Online Games and MMORPGs

As mentioned previously, problematic video game playing (PVP) is closely related to problematic Internet use (PIU). People with PVP are going to use the Internet excessively also

as the Internet is the medium that provides access to the game that they use excessively. Online games which include massively multiplayer online role-playing games (MMORPGs) are growing in popularity as are the problems associated with such games.

Excessive Internet use and gaming are receiving more attention as the online gaming industry grows 35.7% yearly (Decker & Gay, 2011). Video game sales are at $40 billion and growing with 50-65% of players reporting being addicted to their preferred game (Hsu, Wen, & Wu, 2009; Oggins & Sammis, 2010). Internet game addiction has been measured as high as between 73% and 84% in South Korea (Koo et al., 2011). Internet use has become a big part of daily life and one of the negative effects is excessive online gaming, which has become a major concern (King et al., 2011; Koo et al., 2011; Lee et al., 2007; Lo et al., 2005). Advancement in computer technology, including the Internet, has allowed for the creation of MMORPGs which are extremely immersive (Hsu et al., 2009; Lee et al., 2007; Li et al., 2011). Online games provide anonymity along with the ability to communicate and interact with others from around the world and are the main reason some teens spend so much time on the Internet (Lo et al., 2005). The anonymity that online chats and games provide allows people to create a different self which can be more appealing and fun than there real life self (Ng & Wiemer-Hastings, 2005). Online gaming is one of the most addictive things to do on the Internet and can lead to several social issues (Wan & Chiou, 2010).

Multiplayer online role playing games are growing in popularity with a significant portion of players playing excessively leading to problems in their real life to the extent that addiction has been used to characterize the problem (Decker & Gay, 2011; Hsu et al., 2009; Oggins & Sammis, 2010; Snodgrass et al., 2011). Multiplayer online role-playing game addiction is a modern day addiction similar to Internet addiction and these new addictions share

48

most of the same tenants of chemical addiction (Hsu et al., 2009). Although there are several

MMORPGs World of Warcraft (WOW) is the most popular MMORPG with 11.5 million users

(Oggins & Sammis, 2010).

Pathological gambling is the only recognized behavioral addiction by the APA.

Pathological gambling has eight structures of which accessibility and continuous are the most

important. World of Warcraft has some of the same structures including the key structures of

accessibility and continuous. One notable difference between WOW and gambling is that

investing time in WOW leads to a slow accumulation of in game wealth where time gambling

almost always leads to losses in real wealth.

Entrapment in gambling is feeling the need to invest more despite mounting losses

because they have invested too much to give up at this point. This is seen when raiding in WOW

where there is a small chance a certain item will drop from a boss and people feel compelled to

try each week.

A near miss is a gambling term where a person gets close to winning but doesn't and

therefore keeps playing believing they are close to winning. World of Warcraft players often

play longer than they planned as they get close to defeating a boss and therefore keep trying

(Karlsen, 2010). Some researchers argue that because pathological gambling and PVP share

some key components, as mentioned above, that both should be labeled as addictions and not just

gambling.

There is a strong social aspect associated with MMORPGs and there is a strong

correlation between excessive online gaming and the social aspects of the game (Karlsen, 2010).

People at risk for Internet addiction who played video games preferred playing online games

with others possibly because the games would provide social interaction (Lee et al., 2007). Two

way communication, such as that found in chat rooms and multiplayer games, has been identified as a factor of Internet addiction (Chou, 2001). Some players consider their social interaction in MMORPGs as more important/better than their real life interactions (Ng & Wiemer-Hastings, 2005; Smahel et al., 2008). Gaming studies show that competition and cooperative play place social demands on players, or peer pressure, which lead to excessive play (Karlsen, 2010).

Amongst the different genres of online games, one study had results that indicated that subjects who played MMORPGs were more likely to be addicted then subjects who did not play MMORPGs (King et al., 2011; Kuss et al., 2012; Li et al., 2011). This study is supported in other studies which indicate that high risk Internet users preferred role playing games (RPGs) which indicates that RPGs may be more addictive than other games (Lee et al., 2007). Role playing games have a greater possibility of leading to problematic usage as the characteristics of the game require greater effort to master the skills needed and therefore high time commitments. Added to this is the fact that the game never ends with new content added frequently and players also tend to lose track of how long they have been playing (Kuss et al., 2012; Lee et al., 2007; Ng & Wiemer-Hastings, 2005; Oggins & Sammis, 2010). Losing track of time is one reason that researchers have found a correlation between playtime (hours in game per week) and addiction (Hsu et al., 2009; Lo et al., 2005; Smahel et al., 2008).

Early research into video game addiction assumed that the more time playing the game the more at risk for problems stemming from the persons game play. These early studies used seemingly arbitrary numbers to define various levels of use and it should be noted that excessive play does not necessarily mean the person is addicted (King et al., 2011; Smahel et al., 2008). In fact there are currently no agreed upon definitions of video game addiction (Oggins & Sammis, 2010).

Three methods of prevention and/or treatment have been tried in China. The first approach was for the Chinese government to monitor game play and decrease the power of the avatar after a certain amount of time in game. Identifying potential addicts and educating them before they become addicted has also been tried. The last approach has been to change the game design to remove the addictive features. All of these attempts had limitations that prevented them from being successful (Hsu et al., 2009).

The South Korean government has developed a boot camp to cure kids with Internet and online gaming addiction. The boot camp program consists of education activities and training activities mixed with outdoor activities. Education courses are categorized into mental training, brain education to train the frontal lobe, brain system training and emotional control. By viewing Internet addiction through the habit theory, abstinence and changing habits were the chosen course of treatment. Creating a better family and school communication/support network for the student after boot camp was considered of critical importance by the researchers (Koo et al., 2011).

Yee looked at player motivations and found three components: achievement (advancement, mechanics and competition), social (socializing, relationship and teamwork) and immersion (discovery, role-playing, customization and escapism) (Lee, 2007). When players were asked their perceptions they reported the game as being the major focus in their lives and that the game led to negative outcomes (Kuss et al., 2012).

Online games provide a social aspect which is very appealing to the people that play these games. Along with the social aspects are the anonymity and the immersive aspect of these games. This allows people to escape from their problems in the real world, which can be very appealing. This is particularly troubling for college students living in residence halls as they now

have an option other than social interaction with their peers and that option is easier for some of students that find real life interactions more uncomfortable than online interactions. If a student chooses to spend all their free time online that behavior would negate the benefits of living in a residence hall which has been shown to increase graduation rates.

Adolescents and College Students

Studies have indicated that adolescents are overusing the Internet, video games and gambling (Yang, Lay, & Lay, 2008). Over the last decade there has been a large increase in the number of adolescents and young adults using the Internet for social interaction sparking concern for excessive use and even addiction (Smahel et al., 2012). Adolescents are more vulnerable to develop PIU (Canan et al., 2010; Chin-Chung, Sunny, & Lin, 2003; Chiou, 2008; Cho et al., 2008; Ferraro et al., 2007; Fioravanti et al., 2012; Gamez-Guadix, Villa-George, & Calvete, 2012; Israelashvili et al., 2012; Jang et al., 2008; Khazaal et al., 2008; Ko et al., 2007; Lam et al., 2009; Lee et al., 2007; Liberatore et al., 2011; Mann Hyung, 2006; Sahin, 2011; Sargin, 2012; Siomos et al., 2008; Smahel et al., 2012; Tsai & Lin, 1999; Yates, Gregor, & Haviland, 2012; Yen et al., 2007) possibly because of the stage of development of that age group and the use of the Internet to socialize (Gamez-Guadix et al., 2012; Jang et al., 2008) or possibly because of online gaming (Chiou, 2008; Khazaal et al., 2008; Ko et al., 2007). Adolescents and young adults are focused on developing relationships from a developmental perspective. Young people use the Internet to communicate with peers, a fact that does not appear to vary across different cultures. They use the Internet to maintain current friendships and to develop new ones (Smahel et al., 2012). This can be detrimental to college success as social interaction with peers outside of the classroom has been shown to increase persistence of students who live in residence halls. If a student chooses to stay in their single room and not interact with the real world then they are

losing the benefits of living in a residence hall and therefore decreasing their chances to graduate.

A study by Fioravanti et al. (2012) hypothesized that among adolescents, self-esteem will predict preference for online social interactions which will then predict Internet addiction. Computer mediated communication is attractive to people with low self-esteem as it takes away nonverbal cues and gives a sense of greater control over how they present themselves. Physical avoidance may be a coping strategy for the stress of face-to-face interactions (Fioravanti et al., 2012).

Adolescents also tend to develop more serious problems when they become addicted (Mann Hyung, 2006). In China, there are 187 million online game players and many of those are likely addicted to online games. Online game addiction is considered one of the most damaging behaviors for adolescents (Zhou & Li, 2009). In Taiwan, cyber cafe video game playing is widespread with surveys showing over 85% of adolescents using cafes and 80% of those playing games which has lead to social problems and poor performance in school (Yang et al., 2008).

Other research on this topic suggests that adolescents use the Internet for mainly positive purposes and therefore their overuse may be for a normal need that is being alleviated through the Internet. Self - concept is complex and not always stable and well defined. Adolescents as a group tend to be trying to figure out who their self is and who they want to become. It is possible that the Internet is providing adolescents with a way to explore themselves. 6% of the students sampled used the Internet for more than 38 hours per week and therefore fit the definition for addicted. Those whose self is not yet clearly defined may use the Internet more than those who do have a clear sense of self. It is possible that addiction should not be defined strictly by number of hours using but rather what purpose is the Internet used for. This is based

on the belief that over use for positive purposes such as better life management or clarifying one's self is not addiction (Israelashvili et al., 2012).

College Students' Increasing Time Online

College students are spending an increasing amount of time online. Student affairs professionals should exert more effort alerting students and faculty to the potential problems of Internet use especially as the Internet becomes more integrated into college life (Fortson et al., 2007). As the Internet continues to develop and online learning increases these figures will likely rise. Dependent subjects used the Internet more often than non-dependent subjects which indicates increased risk as teaching utilizes online methods more often (Wang, 2001).

Information Communication Technology (ICT; ex. laptop) is being integrated into education at a higher rate. Despite the benefits of ICT there is a small portion of the population who exhibit addictive behavior towards ICT (Brosnan & Hinvest, 2012).

Technology has the potential to solve some of the problems inherent in mass education but technologies quick evolution does not allow for critical evaluation. Learners tend to believe technology enhances their education while educators tend not to hold that belief. Several studies indicate that the Internet does not have a positive effect on academic performance and in many cases can hinder academic performance (Brosnan & Hinvest, 2012). Despite this, some educators view the Internet as a means to increase a students' proficiency and students are therefore pushed to use the Internet more (Nalwa & Anand, 2003). If the Internet does hinder academic performance then the fact that distance education requires a student to be online more often is particularly troubling (Celik et al., 2012).

Higher education provides easy access to the Internet for all of its students. Colleges and universities have helped to create the ideal situation to cultivate Internet use with free unlimited

high speed access, large amounts of unstructured time, freedom from parents, no monitoring of activities online and nearly 100% computer ownership. Partially due to the realities of budget constraints and partially because of the convenience and ease of use, faculty and administration has pushed the integration of technology into education and as a result encouraged students to use online resources (Brosnan & Hinvest, 2012; Celik et al., 2012; Ceyhan, 2008; Ceyhan & Ceyhan, 2008; Ceyhan, 2010; Chou, 2001; Huang et al., 2009; Jelenchick et al., 2012; Jong-Un, 2007; Li et al., 2008; Mehroof & Griffiths, 2010; Nalwa & Anand, 2003; Ni, Yan, Chen, & Liu, 2009; Odaci, 2011; Park et al., 2008; Sujin, 2010; Ya-Rong, 2006; Yuen & Lavin, 2004). Students have Internet access everywhere on campus and, with that, access to almost everything they need and want to do (Yuen & Lavin, 2004).

As a result students are repeatedly interacting with the Internet on a daily basis. As can be seen in Appendix A if interacting with the Internet starts to produce a desirable neurobiological shift this can lead to social problems, such as deviant-behaviors, delinquency and social drift, and psychological problems, such as psychopathology and comorbidity.

Evidence for the potential for social problems are in a study at Alfred University which found that 32 of 75 freshman dropouts spent at least 6 hours per night on the Internet. Another study showed 9% of students were dependent on the Internet and exhibited problem behaviors such as missing class and poor academics (Yuen & Lavin, 2004).

Alcohol on college campuses is viewed as a major public health concern (National Institute on Alcohol & Alcoholism, 2002), with one study indicating that approximately 70% of university students had consumed alcohol in the last month (Johnston, Bachman, & O'Malley, 2000). Alcohol consumption is clearly a big factor when college students socialize. Considering that the majority of college students are less than 21 years of age, it is also clear that underage

drinking is happening. Although some students are drinking underage, being under 21 can limit social activities and coupled with homesickness can push some students to the Internet (Brosnan & Hinvest, 2012; Chou, 2001).

As mentioned previously, in terms of development, identity is of particular relevance for college students (Ceyhan, 2010; Odaci, 2011; Ya-Rong, 2006; Yuen & Lavin, 2004). The Internet's anonymity can allow for students to experiment with their identity development, which can be particularly alluring to those students who are not completely comfortable in social settings.

Due to the early stages of research in this area there are no widely accepted definitions and therefore there are several terms used that mean the same or similar things. This makes it difficult to estimate the extent of the problem. However most estimates of PIU are between 6-10% with 10-33% more showing lesser symptoms (Brosnan & Hinvest, 2012; Ni et al., 2009; Park et al., 2008; Yuen & Lavin, 2004).

It has been suggested that student affairs professionals have the greatest ability to help these students by changing policies in dorms and raising awareness (Chou, 2001). Kandell's theory suggests that administrators should treat Internet addiction by helping develop the student in terms of identity and intimacy. Preventing Internet addiction by getting freshman involved as early as possible would possibly be an effective measure (Ya-Rong, 2006).

Adolescents and young adults have been identified as at higher risk to develop PIU. Because of this high school students along with college students have been studied often. While there have been some studies completed using US students as the subjects, the majority of the studies have been done on non US students. Of the 55 studies that specifically used students as subjects in the review of literature, only 5 used U.S. students as subjects. This is one of the gaps

in the literature and indicates the need for research on American college students. There is also

no research done on American college students living in residence halls. This is important to

note as studies on retention between the 1960's and 2000 consistently show that the single

biggest factor affecting persistence is living in a residence hall (Astin, 1993). Therefore

researching U.S. college students in residence halls is a logical direction for future research.

Academic Performance

In many ways academic performance is a hard thing to define. The current trend is

towards measuring academic performance through standardized tests. According to the Pew

Center, after the No Child Left Behind Act of 2002 passed there was a 160% increase in

spending on standardized testing between 2002 and 2008. Despite this increase in usage of

standardized testing to measure academic performance there are just as many arguments against

the use of standardized tests as for the use of academic tests (Procon.org, 2015).

Whether standardized tests are a suitable measure of academic performance is a moot

point in terms of this study as universities do not use standardized testing except for admittance

purposes. Based on the goals of this research and the literature review, academic performance

included measures affecting retention and persistence towards graduation.

One of the requirements to graduate at the university where this study was conducted is

having an average GPA of 2.0 or higher. Simultaneously, when a student drops below a 2.0

cumulative GPA this university places the student on academic probation. Therefore being on

academic probation would indicate that a student was in danger of not graduating. Because of

this, one of the measures of academic performance was whether the student was on academic

probation or not.

Academic support services are provided at this university to serve "as a means for retention of students and is an important element in enabling students to achieve their academic goals". These support services are designed to increase retention which would also increase graduation rates. Because of this, the second measure of academic performance was how often the student used academic support services.

Summary

This chapter started with a review of the history of the problem by giving a brief history of the key factors of dormitories, computers, the Internet and video games. The advancement of computers, the Internet and video games is discussed and how these components have pushed the limits of each other to the point that video games are incredibly popular and immersive. These advancements combined with the evolution of the dormitories of the past into the residence halls of today has created a new and unique problem for traditional college students who are at a developmental transition and susceptible to PIU and PVP. The last component of the problem is addiction and a review of the history of addiction and how research has led to the addiction syndrome theory is presented.

While the literature clearly shows some controversy over whether someone can be addicted to the Internet or a video game, there is clearly no controversy in the literature that PIU and PVP is a growing problem. Online games and MMORPGs in particular are a billion dollar a year business and the industry is predicted to continue to grow. Adolescents and college students have been shown to be particularly susceptible to PIU and PVP due to the developmental transitions they are experiencing and also due to the transition to the college campus which provides and encourages the use of the Internet.

CHAPTER 3: METHODOLOGY

Design of the Study

A review of the scholarly research revealed that research on problematic internet use (PIU) and problematic video game play (PVP) is still in its infancy (Brosnan & Hinvest, 2012; Widyanto et al., 2011). Since researchers do not have a solid understanding of addiction development at this time, the professional and research communities that specialize in higher education remain split on whether behavioral addictions, and by extension problematic internet use (PIU) and problematic video game play (PVP), even exist (Campbell et al., 2006; Decker & Gay, 2011; Munoz-Rivas et al., 2010). The research that has been done focused primarily on finding and clarifying factors associated with PIU and PVP, the majority of which focused on institutions in Southeast Asia. Regardless of whether PIU and PVP ultimately qualifies as an addiction, the research clearly indicates that PIU and PVP is a growing problem (Cam & Isbulan, 2012; Ceyhan, 2008; Israelashvili et al., 2012; Jong-Un, 2007; Moraham-Martin & Schumacher, 2000; Saville et al., 2010; Smahel et al., 2012; Stieger & Burger, 2010; Yuen & Lavin, 2004; Zhang et al., 2008) that will continue to grow as the internet continues to become more intertwined in the lives of people worldwide.

Since there has been little research conducted on this topic in the U.S., little is known about the extent of the problem in this country. As a result, this study explored the degree to which the problem exists in America and utilized a non-experimental quantitative methodology. Information was collected through administration of a survey. The items on the survey will consisted of (1) descriptive questions, (2) Young's Internet Addiction Test (IAT), and (3) questions use of academic resources and academic probation status. Young's (IAT) is by far the

most frequently selected instrument in studies focusing on PIU and PVP and has been proven to be both valid and reliable. The survey instrument was managed online through Qualtrics.

Research Questions

This study is based on the following research questions:

1. What is the level of online activity among first year college students at a metropolitan university?

2. Is there a relationship between level of online activity and academic performance at a metropolitan university?

Population

The population selected for this study consisted of the residents of a university residence life program. The scholarly literature indicates that college students are particularly susceptible to PIU and PVP due to the developmental stage of that age group and their transition from home and parental supervision to a college campus with no supervision. These conditions made residents in a university residence life program an ideal choice as almost all the students who reside on this campus are traditional aged and all are living away from home.

The selected university is a very large university with more than 60 000 students and is currently the first choice for students applying to universities in the public university system in that state. The residence life program housed approximately 11605 students. Of these students, 2577 lived on the main campus in college owned and operated property, were 18 or 19 years old and were classified as freshman students; this group served as the convenience sample for this study. This selected convenience sample allowed for more control over the administration of the survey and assured that all respondents were undergraduate students. In order to qualify as a participant in this study, a student had to be at least 18 or 19 years old and have freshman status.

60

All of the students from the mentioned population (2577) were given the opportunity to complete the survey.

Context

This university has offered online classes for over a decade and is one of the national leaders in the development of online classes. The programs at this university have been studied and replicated by other universities around the nation. As this university continues to grow, online courses have become necessary as scheduled course sections outnumber available classroom space. While online classes originally were designed to address the needs of non-traditional students who could not attend classes during the day, traditional-age students are very computer literate and have found online classes to be an attractive alternative to onsite classes. At least half of all students enrolled at this university were taking, at minimum, one online class (Zaragoaz, 2010).

Instrumentation

Recent advances in imaging technology have led some of the leading researchers in the field of addiction to expand their concept of addiction. In an effort to work towards a unifying theory of addiction, and using the latest research as support, leaders in the field of addiction have started to look at addiction as a syndrome (LaPlante et al., 2012). While all of the evidence on addiction gathered over the last several decades supports the addiction syndrome theory (AST), there is not yet a gold standard instrument of diagnosis (LaPlante et al., 2012). Through the examination of prior research in the areas of PIU and PVP, one instrument has emerged as the standard for internet addiction assessment in the research settings. The Young Internet Addiction Test (IAT) was developed by Dr. Kimberly Young and was the first validated measure for Internet addiction. In 1998, Kimberly Young developed the IAT by adapting DSM-IV

criteria for pathological gambling and using research that she conducted in 1996. Originally, the scale consisted of eight items but was later expanded to include 20 items as Young's research developed 12 new items which increased the validity of the instrument ("Young's Internet Addiction Test," 2009).

In 2004, a study using the IAT tested the instrument for both validity and reliability and found both to be within acceptable measures (Widyanto & McMurran, 2004). A later study in 2008 found the instrument to be valid with university students (Chang & Man Law, 2008). Another study in 2008 found the instrument to be reliable with medical students (Khazaal et. al, 2008). The vast majority of the studies related to PVP and PIU that used an instrument either used Young's IAT without modification or adapted the IAT to fit study requirements. When researchers did adapt the IAT, they generally made changes to account for culture and translation.

While the IAT may not be a gold standard instrument for measuring addiction, the IAT has become the standard for diagnosing PIU and PVP and currently ranks as the most valid instrument available; it would not be possible to make accurate comparisons between this study and prior research without using the IAT in this study. For this quantitative study, the IAT was the primary instrument used. Some demographic questions were added. Table 1 explains the relationship between these questions and the variables in this study.

The survey was administered online after securing permission from the Institutional Review Board (IRB). A link to the survey was sent via email to 2577 freshman residential students using their email address on file with the Housing and Residence Life office. The link took the student to the survey. The survey was not accessible to the public.

Table 1: Relationship between Variables and Survey Questions

Variables	Survey Questions
Demographics	1-2
Level of online activity	3
Academic performance	4-5

Question 3 on the instrument will be the IAT that utilizes a 5 - point Likert scale. The summed total for the entire survey yields a score between 0 and 100. There is a positive correlation between total score and level of problematic Internet activity. The range of scores along with the level of problematic internet use and activity include the following:

- 0-29 points indicate the subject has no issue with using the Internet.

- 30-49 points indicate the subject is an average on-line user. He may surf the internet a bit too long at times, but he has control over his usage.

- 50-79 points indicate the subject is experiencing occasional or frequent problems because of the Internet. He should consider the full impact of Internet use on his life.

- 80-100 points indicate the subject's Internet usage is causing significant problems in his life. He should elevate the impact of the Internet on his life and address the problems directly caused by his Internet usage.

Questions 1 and 2 were demographic questions identifying age and gender. Questions 4 and 5 were questions about use of academic resources and academic probation status.

Reliability and Validity

The IAT was the first instrument to measure internet addiction that has been validated. The psychometric properties of the IAT have repeatedly indicated that the instrument is within acceptable ranges for both validity and reliability. Cronbach's alpha scores for the IAT typically

range from as low as .54 to as high as .93, which indicates adequate reliability ("Young's Internet Addiction Test," 2009).

Data Collection Procedures

Information was collected following the principles of internet surveys written by Don Dillman. These principles were used in the design of the survey. These principles are based on the Social Exchange Theory. According to these principles response rates will be higher when rewards are viewed to be high, costs are viewed to be low and trust has been established (Dillman, 2000).

The next step in collecting information was to contact the Housing and Residence Life department at the University of Central Florida where a list of their residents who lived on the main campus in university owned and operated facilities and were 18 or 19 year old freshman status was created. This list had 2577 students and emails were sent to all of them. Following Dillman's method, an initial introductory email was sent that invited recipients to participate in the study. A second email was sent three days later and in the email there was a link to the online survey. A follow up email was sent one week later encouraging the students to complete the survey and thanking them if they already had already completed the survey. A fourth and final email was sent one week later reminding students to complete the survey and thanking them if they had already completed the survey.

Statistical Analysis

The information from the online survey was entered into SPSS and analyzed. The Spearman's rho correlation method was used to determine the relationship between two variables in terms of both strength and direction.

Authorization to Conduct the Study

Upon the successful defense of the proposal and approval by the dissertation committee, permission was obtained from the IRB to conduct this study on April 10th, 2010. A copy of the approval letter from the IRB is contained in Appendix G.

Originality Score

The University of Central Florida requires for all dissertations to be submitted to *ithenticate.com* for review of originality and advisement purposes. My dissertation chair, Dr. Cintron, was responsible for submitting, reviewing and discussing the results with the members of the committee and myself. This review is an automated process that allows uploading the dissertation and screens it against other published documents available through the internet and multiple web-based databases. The results will reveal any text matches that need to be reviewed.

CHAPTER 4: DATA ANALYSIS AND FINDINGS

Introduction

This chapter will begin with a review of the data collection process and the response rate. This will be followed by a quick look at the descriptive statistics. Research question one and two will then be investigated by way of analysis of the inferential data collected.

Data Collection

Information was collected following the principles of Internet surveys written by Don Dillman. The process started with an introduction to the study email followed a few days later with email with a link to the online survey. One week and two weeks after the email with a link to the survey, reminder emails were sent. Therefore surveys were collected for approximately 3 weeks with the majority of responses being recorded in the first two weeks. Each email went to 2577 students.

During the time that the survey was available to the students 325 surveys were recorded as started. Due to the low response rate it was decided not to eliminate any surveys that had some missing answers as all of the responses were needed in order to run the analysis. This led to some variation in the number of responses for some of the questions on the survey. All of the responders indicated they were 18 or 19 years old as anticipated as that was the group that was targeted. Of the useable surveys, 139 were submitted by females and 80 were submitted by males with 3 students not indicating gender.

Table 2: Frequencies - Gender and Age

Gender/Age	Frequency	Percentage
Male	80	36%
Female	139	63%
18 years old	75	34%
19 years old	129	58%

Note - 18 responses did not indicate age and 3 responses did not indicate gender

The emails were created by the researcher but distributed through the Housing and Residence Life department at the university where the study was conducted. This was done to so that the researcher had no contact with the population being surveyed and would have no way of identifying individuals in the population or who responded. This process was used to help ensure confidentiality.

The software Qualtrics was used to create the survey and administer it online. The software includes a feature to record ip addresses of survey completions so that the same computer can't have multiple attempts. It should be noted at this point that it is possible that some students may have multiple survey entries if they completed the survey from more than one computer or device. It is also possible that some of the students forwarded the email to others who may have completed the survey as there was no way to protect against that scenario and keep the responders anonymous.

Research Question One

Research Question One: What is the level of online activity among first year college students at a metropolitan university?

The results from the Internet Addiction Test (IAT) indicate the level of online activity for each student who completed the survey. The IAT is a 20 item scale designed to measure

67

Problematic Internet Use (PIU). The IAT uses a 5 point Likert scale ranging from 1 to 6 where 1 = not applicable, 2 = rarely, 3 = Occasionally, 4 = Frequently, 5 = Often and 6 = Always. In the survey, the IAT was labeled as question 3. Question 3 therefore contained the 20 questions of the IAT. For the purposes of this analysis the 20 questions of the IAT will be labeled as question 3 with parts 1 through 20.

For each of the 20 questions of the IAT (question 3, parts 1-20) the mean was calculated. While this is a 5 point scale, 4 is the midpoint on the IAT scale since 1 is labeled N/A and for that reason has no value. For each question on the IAT, if the mean values of the answers were above 4 then that would indicate that more than half of the students agreed with the question and if the mean values of the answers were below 4 that would indicate that most of the students disagreed with the question.

As shown in Table 3, the mean values on the questions of the IAT ranged from 4.2 to 2.63, with standard deviation ranging from 1.309 to .789. Table 3 also shows that more than half of the students surveyed agreed that they often stayed online longer than they intended. Furthermore, the table reflects that most of students surveyed did not feel that they often checked email or other online messages before doing something else they needed to do (mean=3.72 standard deviation, 1.241). Lastly, the table shows that most of the students surveyed did not prefer the excitement of the internet to the intimacy with their partner (mean=3.20 standard deviation, 1.176).

Table 3: IAT Means

IAT Question	Mean	Standard Deviation
1) Do you often find yourself staying online longer than you intended?	4.20	1.259
2) Do you often neglect household chores to spend more time online?	3.20	1.176
3) Do you often prefer the excitement of the Internet to intimacy with your partner?	3.15	.866
4) Do you often form new relationships with other online users?	2.91	1.118
5) Do others in your life often complain to you about the amount of time you spend online?	2.63	.905
6) Do your grades or work often suffer because of the amount of time you spend online?	2.66	.876
7) Do you often check email or other online messages before something else that you need to do?	3.72	1.241
8) Do you find that your job performance or productivity suffer because of your Internet use?	2.98	1.077
9) Do you often find that you become defensive or secretive when others ask what you do online?	2.66	.936
10) Do you ever block out disturbing thoughts about your life with soothing thoughts about Internet activities?	2.98	1.089
11) Do you often find yourself anticipating when you will go online again?	2.88	1.096
12) Do you ever find that you fear that life without certain Internet activities would be boring, empty, or joyless?	2.92	1.092
13) Do you often snap, yell, or act annoyed if someone bothers you while you are online?	2.65	.789
14) Do you find that you often lose sleep due to late-night log-ins?	3.39	1.309
15) Do you often feel preoccupied about the Internet when you are offline, or daydream about being online?	2.73	.858
16) Do you often find yourself saying "just a few more minutes" or something similar when you are online?	3.33	1.299
17) Do you often try to cut down the amount of time you spend online and fail?	2.84	1.011
18) Do you often try to hide how long you've been online?	2.71	.868
19) Do often choose to spend time online over going out with others?	2.88	1.045
20) Do you often feel depressed, moody, or nervous when you are offline, which goes away when you are online again?	2.93	.966

Table 4 shows the results from the IAT after it was scored. The average score was 27.85 which falls in the normal range of internet activity and 63.8% of respondents scored in that range. 32.13% of the students scored in the mild addiction range, 4.07% in the moderate addiction range and 0% in the severe addiction range.

This means that 96% of the students that responded were either normal or had mild problems with their internet activity. This is consistent with the results from analyzing the means from Table 3.

Table 4: IAT Scoring

Scores	Frequency
Mean Score	27.85
Normal Activity (0-30 points)	141 (63.80%)
Mild Addiction (31-49 points)	71 (32.13%)
Moderate Addiction (50-79 points)	9 (4.07%)
Severe Addiction (80-100 points)	0
N	221

Research Question Two

Research Question Two: Is there a relationship between level of online activity and academic performance at a metropolitan university?

The results from the Internet Addiction Test (IAT) indicate the level of online activity for each student who completed the survey. The IAT is a 20 item scale designed to measure Problematic Internet Use (PIU). The IAT uses a 5 point Likert scale ranging from 1 to 6 where 1 = not applicable, 2 = rarely, 3 = Occasionally, 4 = Frequently, 5 = Often and 6 = Always. In the survey, the IAT was labeled as question 3. Question 3 therefore contained the 20 questions of

the IAT. For the purposes of this analysis the 20 questions of the IAT will be labeled as question 3 with parts 1 through 20.

Academic performance was measured by questions 4 and 5 of the survey. Question 4 asked how frequently the student had taken advantage of academic support services provided by the university. Question 5 asked if the student was on academic probation.

Tables 5 and 6 present inter correlations among the study variables. These inter correlations give a general picture of relationships among level of online activity and academic performance. The Spearman's correlation coefficients value can vary from -1.00 to +1.00. A correlation value of +1.00 indicates a perfect positive correlation while a value of -1.00 represents a perfect negative correlation and a value of 0.00 indicates no linear relationship between the X and Y variable or between two variables (Tabachnick & Fidell, 2007).

Table 5 shows a very low level of correlation between online activity and question 4. The correlation coefficient was only .024 and not significant. The results of the correlation analysis didn't prove the existence of correlation between online activity and use of academic support services.

Table 6 shows a low but significant level of correlation between online activity and academic probation. The correlation coefficient was .161 and significant. This indicates that being on academic probation may explain a significant amount of online activity. While the correlation was low, since it was at a significant level, a Spearman's rho was calculated for each question of the IAT and question 5 (academic probation). While this was not necessary to answer the research question, it did provide more insight into the relationship between academic probation and online activity.

Table 5: Correlation – Academic Support Services and Online Activity

			Q4	Online Activity
Spearman's rho	Q4	Correlation Coefficient	1.000	**-.024**
		Sig. (2-tailed)	.	.718
	QMO	Correlation Coefficient	-.024	1.000
		Sig. (2-tailed)	.718	.

Table 6: Correlation – Academic Probation and Online Activity

			Online Activity	Q5
Spearman's rho	QMO	Correlation Coefficient	1.000	**-.161***
		Sig. (2-tailed)	.	**.016**
	Q5	Correlation Coefficient	-.161*	1.000
		Sig. (2-tailed)	.016	.

*Note - *. Correlation is significant at the 0.05 level (2-tailed).*

Table 7 shows the correlation between question 5 (academic probation) and the IAT (online activity). The results of the correlation analysis proved the existence of the correlation for question 5 and question 3 part 3, part 5, part 6, part 9 and part 15. Question 5 was shown significant with question 3 part 3, (-.153* (p<.05)), part 5 (-.195** (p<.01)), part 6 (-.162* (p<.05)), part 9 (-.183** (p<.01)), and part 15 (-.178** (p<.01)). The rest of the questions on the IAT were not significant with Question 5.

Table 7: Correlation - Question 5 and IAT Questions

Question	Spearmans Rho	Significance Two-tailed
3 part 1	.001	.986
3 part 2	-.074	.272
3 part 3	**-.153**	**.023**
3 part 4	-.075	.268
3 part 5	**-.195**	**.004**
3 part 6	**-.162**	**.016**
3 part 7	-.109	.108
3 part 8	-.109	.106
3 part 9	**-.183**	**.006**
3 part 10	.048	.479
3 part 11	-.047	.490
3 part 12	-.011	.871
3 part 13	-.102	.134
3 part 14	-.061	.367
3 part 15	**-.178**	**.008**
3 part 16	-.108	.113
3 part 17	-.053	.435
3 part 18	-.089	.191
3 part 19	-.031	.649
3 part 20	-.132	.052

*Note: **Bold** indicates significant correlation with question 5. *Correlation is significant at the 0.05 level.*
**Correlation is significant at the 0.01 level

Table 8: Frequencies - Question 4

Answer	Response	Percentage
Never	63	27
Rarely	59	26
Occasionally	67	29
Often	42	18

CHAPTER 5: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

Introduction

The focus of this study was Problematic Internet Use (PIU) among traditional aged college freshman students and the relationship between student's internet use and academic performance. The instrument used to collect the data that the results are based on is the Internet Addiction Test (IAT) which was developed by Dr. Kimberly Young. The survey was self-administered through the online software package, Qualtrics. This information was analyzed and presented in Chapter 4 and will be discussed in this chapter in relation to Chapter 2. The implications of these findings will also be presented in relation to policy and future research.

Research Question One

Research Question One: What is the level of online activity among first year college students at a metropolitan university?

The purpose of this question was simply to determine the frequency of use of the internet amongst the specified population. Prior research indicated that PIU was a problem in this population in other countries but the levels of use varied widely depending on the study.

The IAT is a 5 point Likert scale. In order to analyze this data, the mean for each question of the IAT was calculated. While this is a 5 point scale, 4 is the midpoint on the IAT scale since 1 is labeled not applicable and for that reason has no value. Therefore, a mean above 4 would indicate that more than half of the students agreed with the question while a score below 4 would indicate that most of the students disagreed with the question. Using this method of analysis, only Question 1 of the IAT had the majority of scores above 4. Overall, this indicates that the majority of students surveyed in this study had low to average internet use.

74

These finding are supported when looking the actual scores on the IAT. When scoring the IAT, an answer of 1 gives 0 points, an answer of 2 gives 1 point and so on for a maximum score per question of 5. Adding the points given for each question gives a total score. A total score can range from 0 points to 100 points. 0 to 30 total points indicates a normal level of internet activity, 31 to 49 total points indicates a mild level of addiction to the internet, 50 to 79 total points indicates a moderate level of addiction to the internet and 80 to 100 total points indicates a severe addiction to the internet.

The average score of the IAT was 27.9 which indicates the average student surveyed was within the normal range. 0 students scored in the severe addiction range, 4% scored in the moderate range, 32% scored in the mild range and 64% scored in the normal range.

The results are fairly consistent with prior research (Campbell et al., 2006; Fortson et al., 2007; Israelashvili et al., 2012; Lin et al., 2011; Wang, 2001), which measured mild to moderate internet abuse at 28%-50% but severe internet abuse between 4%-22%. Based on the IAT, 36% of the students surveyed used the internet above normal levels. The fact that none of the students surveyed in this study had a severe problem is inconsistent with prior research.

<div align="center">Research Question Two</div>

Research Question Two: Is there a relationship between level of online activity and academic performance at a metropolitan university?

The purpose of this question was to determine if an increase in online activity had any effect on academic performance. Prior research indicated that PIU was a problem in this population in other countries and that it had caused increased dropout rates.

The results from the Internet Addiction Test (IAT) indicated the level of online activity for each student who completed the survey. The IAT is a 20 item scale designed to measure

Problematic Internet Use (PIU). The IAT uses a 5 point Likert scale ranging from 1 to 6 where 1 = not applicable, 2 = rarely, 3 = Occasionally, 4 = Frequently, 5 = Often and 6 = Always.

Academic performance was measured by questions 4 and 5 of the survey. Question 4 asked how frequently the student had taken advantage of academic support services provided by the university. Question 5 asked if the student was on academic probation.

Question 4 only accounted for 2.4% of online activity which is not a significant amount. Question 5 accounted for 16.1%, which is significant but very low significance. 15 of the 222 responses selected that they were on academic probation which may explain the correlation.

Use of academic resources did not account for a significant amount of online activity. Being on academic probation did account for a significant amount of online activity although it was a weak relationship. Therefore there may be a relationship between level of online activity and academic performance as measured by academic probation.

Since question 5 was found to be significant, the 20 questions of the IAT which measured internet activity were each measured against question 5. Of the 20 questions on the IAT 5 measured as significant in explaining academic performance as measured by academic probation. The 5 questions that were significant were questions 3, 5, 6, 9 and 15 of the IAT.

This indicates a pattern of behavior that is consistent with people who are addicted and is consistent with the literature review. The students surveyed are exposed to the internet often through classes, research and administrative processes. According to the Addiction Syndrome Model, if part of the students interaction with the internet leads to a desirable subjective shift then repeated exposure can lead to the behaviors asked about in the listed questions (LaPlante, Nelson, & Shaffer, 2012).

Internet addiction has been linked to people preferring online socialization to real life socialization (Ng & Wiemer-Hastings, 2005; Smahel et al., 2008), and socialization has been indicated through prior research as a key part to college success (Astin, 1993, 1999), especially the first year of college. Identity development through socialization is a key component in many college student development models/theories (Erikson, 1980; Chickering, 1993). Preferring the internet to intimacy with their partner, others complaining about their internet use, grades/work suffering because of the internet use, being secretive about their internet use and being preoccupied with their internet use may all explain a significant portion of being on academic probation. These questions indicate a preference for online activity which could be explained by a lack of development due to social stagnation causing low grades which led to the student being placed on academic probation.

Implications

Problematic Internet Use (PIU) is a growing problem and college students are at particular risk due to the setting they are in and the developmental stages they are transitioning through. Despite research showing PIU is a growing problem; there is great debate over whether PIU even exists. This is because PIU is a behavioral addiction and there is a lot of controversy in the professional community as to whether behavioral addictions are real. This study was conducted to investigate the level of internet use among traditional aged college freshman and to see if the level of internet use had an effect on academic performance.

Based on the literature review, isolation created by the assigning of a private bedroom is particularly troublesome for college students as research has indicated that college students are at higher risk to develop problematic Internet use (PIU) and problematic video game play (PVP). In addition to this, theories on student development indicate that adolescents and college-aged

77

students are at a period of developmental transition where they are trying to develop a deeper sense of their identity. Socialization on campus is a key aspect to this development (Renn & Reason, 2013) and a key component to student retention and graduation (Astin, 1993, 1999). Increasing access and use of the internet can decrease real life social interactions.

This research indicated that there was a problem with student's online activity leading to them being on academic probation. Although the results were inconclusive, what this may mean for administrators is that ignoring this problem could negatively affect graduation rates due to decreasing social interaction amongst peers, particularly in residence halls.

Addiction experts have found the defining of addiction to be a challenge, along with how addiction develops. Currently, there is no way to determine why one person becomes an addict while another does not. Researchers simply do not have a solid understanding of addiction development at this time. This is the main reason for the controversy in the professional community as to whether behavioral addictions are real or not.

According to LaPlante, Nelson, & Shaffer (2012), Addiction Syndrome Theory (AST) is a natural extension of the research that has come before it; this theory attempts to unify previous research into one theory that is capable of explaining addiction and all of its expressions. Previous research on addiction has shown evidence of many shared features amongst the different expressions of addiction; these shared features indicate a possible common cause that supports the basis of the syndrome model of addiction.

Addiction Syndrome Theory is the only current model that can explain all addictions, including behavioral addictions. Because of this, the theoretical framework used in this study was the AST. AST views all addictions as having an underlying cause. The underlying cause is the first phase of the AST model.

In the first phase of AST, a person's biological factors and psychosocial factors combine to explain a person's underlying vulnerability to addiction. In essence, this means that what nature has given a person (biological elements), along with what a person has been exposed to socially (psychosocial elements), determines a person's risk level for developing an addiction syndrome. This risk level is fluid as some of these elements can change as the person lives their life.

Once a person is at-risk they must be exposed to and interact with an object of addiction. Whether the object is chemical, such as alcohol, or behavioral, such as internet use, is not important. If the exposure and interaction leads to an immediate, desirable subjective shift, then that person may start repeating this interaction. Repeated interaction can lead to social issues, such as reduced academic performance. Because of the nature of higher education today, it can be assumed that college students are exposed to, and repeatedly interact with, the internet by virtue of being a student due to the integration of technology and the internet into higher education.

It remains to be seen if the Addiction Syndrome Theory (AST) is a valid conceptual framework when studying PIU. AST is a relatively new perspective on addiction and what causes it, and the AST framework (Appendix E), especially the modified AST framework (Appendix F), was able to support and help provide perspective on the results obtained from the research. This is important moving forward in an effort to gain a better understanding of addiction as a whole as the AST is the one model that can explain both behavioral addictions and the more traditional chemical addictions. However, further research using AST is needed as the results here were inconclusive.

Based on the literature review in Chapter 2, it was expected that college students would have high levels of internet use and that one of the resulting issues from excessive internet use would be a decrease in academic performance. In this study, the Internet Addiction Test (IAT) was used to measure internet usage and the frequency distribution showed that the majority of students surveyed showed low to average internet use. While the average score on the IAT was 27.9, which is in the normal range of use, 36% of the students scored in the mild to moderate range of internet addiction. While these levels are lower than projected, the overall percentage of students measuring as having an internet problem is consistent with some of the prior research (Brosnan & Hinvest, 2012; Ni et al., 2009; Park et al., 2008; Yuen & Lavin, 2004).

The correlation between online activity and academic probation was low but significant. Based on the literature review, this correlation was expected to be higher. The lower correlation may have been due to only 15 of the 223 students who responded indicating that they were on academic probation.

While academic probation did indicate whether the student was above or below a 2.0 GPA, it would have been useful to have the student's actual GPA. Asking for the students GPA was originally intended to be in the survey but due to an error creating the online survey is was unintentionally excluded. It would have been better to obtain the actual GPA from the school even though this would have decreased the level of security of the data. De-identifying the data would have been a reasonable compromise and would have strengthened the study.

One of the factors that could have impacted this study was the timing of the study. The survey was conducted in the few weeks prior to final exams before summer break. Students at this time of year at this institution had already been asked to fill out many surveys. The pressure of final exams may have limited the response rates as studying and final projects may have

limited time for non-mandatory assignments such as this survey. Also, since this was the second semester, students who dropped out because of grades after the first semester were not part of this survey. The group that dropped out of school prior to this survey may have had a higher degree of addiction to the internet.

As mentioned in the limitations section, all information gathered for this research was self-reported. Without changing the methodology of this study there was no way to verify the accuracy of the information provided by the subjects. This also meant that the information reported may have been skewed due to the circumstances of the individuals at the time of taking the survey. Inaccurate responses could have resulted from one of several bias including social desirability bias and recall bias (La Fleur, 2004). This research would need to be replicated before the implications could be considered reliable.

<div align="center">Recommendations</div>

In a time of decreasing budgets and calls for higher accountability, increasing retention is more important than ever for institutions of higher education. Removing as many barriers to graduation as possible can help improve budgets by keeping students in school and therefore paying tuition. Removing barriers to graduation would also help increase retention which increases graduation rates. Some of the barriers to graduation administrators are aware of and steps have been taken to help reduce those barriers. However, in order to take steps to address barriers, administrators need to know what those barriers are. PIU is not a well-known issue and current policies, such as increasing online classes and providing internet access everywhere on campus, may actually be increasing this potential barrier to graduation rather than decreasing this barrier.

This study was conducted to determine if there is evidence that PIU is a real problem on college campuses and results indicated that there may be a problem. This is important as PIU may cause students to dropout and therefore raising awareness to a potential barrier to graduation is the first step to address the problem. A review of the literature on this topic revealed that this is a growing problem and current policies and environments on college campuses would certainly support that growth. It is therefore critical to determine the extent of the problem in order to remove as many barriers to graduation as possible. Recommendations for future research on PIU in the college setting might include the following:

Institutional

1. Make this survey mandatory for all students around the end of the first semester and, if possible, upon exit from the university. As mentioned above, timing was a weakness of this study. In order to get a more accurate view of PIU, it would have been ideal to also survey those students who left the university before this survey was administered. It is possible that some of the students who left prior to the close of the academic year would have PIU.

2. Training faculty, administrators and other staff on what PIU is and what to do if they feel that a student may have a problem with internet use. Utilize counseling services to get their opinion on the severity of this problem and effective procedures.

3. Programming in the residence halls on this topic could help get students to seek help.

4. Problematic internet use may be a possible problem. It could potentially be classified as a disability which would mean providing reasonable accommodations would be

required. Planning for this potentiality with disability services is therefore recommended.

Future Research

1. Expand the scope of this research to include other institutions. This research focused on one public university. It would be beneficial to explore this subject at other universities such as private institutions for example.

2. Use information that is not self-reported. The IAT is the standard for determining level of internet activity and is designed to work as a self-reporting instrument. However, combing the IAT with information tracked by the university would improve the results of the study. Academic information stored by the university such as GPA, among others, would be a valuable addition to this research.

3. Change the time of the year the survey is administered. The survey was conducted in the few weeks prior to final exams before summer break. Students at this time of year at this institution had already been asked to fill out many surveys. Final exams and other end of the year projects may have left no time to complete this survey. Also, since this was the second semester, students who dropped out because of grades after the first semester were not part of this survey.

4. Use a qualitative methodology. Based on the literature review, there have not been any qualitative studies completed in this area of research. Qualitative research in this area could lead to a much deeper understanding of this issue which could lead to better solutions to the problem.

5. Expand the study to include all students. This study was limited to 18 and 19 year old freshman students living in campus residence halls. Including all students would allow for the problem to be viewed from a broader context.

6. Expand this research outside of the college environment. While research has shown the college age group to be particularly vulnerable to PIU it is likely not the only group that may have a problem with PIU. A better understanding of PIU through all age groups can only increase the understanding of PIU in the college age demographic.

Summary

Problematic Internet Use (PIU) among traditional aged college freshman students and the relationship between student's internet use and academic performance was the focus of this study. Understanding the relationship between PIU and academic performance could help shape policies and procedures in order to remove a possible barrier to graduation.

Research Question 1 analyzed survey responses concerning the level of online activity among first year college students at a metropolitan university. Looking at the mean scores of the IAT indicated that the majority of students had low to average internet use. Only question 1 of the IAT had the majority of scores above 4 indicating that the students who responded tended to stay online longer than intended.

These results were supported by the actual scores on the IAT with the average score being 27.9 which was in the normal range. The majority of the students (64%) scored in the normal range. However, 36% of the students scored in the mild to moderate internet addiction range. While most students do not seem to have a problem with the internet, a relatively large percent do appear to have low to moderate levels of PIU.

Research Question 2 analyzed survey responses concerning the relationship between online activity and academic performance in order to determine if PIU is related to academic performance. Due to the non-parametric data used to answer this question a Spearman's Rho correlational analysis was used. The results indicated that correlation coefficients for use of academic services and online activity were not significant. Conversely, the results indicated that correlation coefficients for academic probation and online activity were significant. While the coefficients for academic probation and online activity were significant the coefficient was only .161 which is low. The reason for this low correlation may be because of the 223 responses only 15 participants indicated that they were on academic probation.

This study has shown that PIU was an issue for college students and therefore may need to be considered when administrators are making policies. It remains to be seen if the Addiction Syndrome Theory (AST) is a valid conceptual framework when studying PIU. AST is a relatively new perspective on addiction and what causes it and, based on this research, further research involving AST is needed.

Only through additional research will the true extent of the problem with PIU and college students be revealed. Expanding on this research, particularly in the ways recommended in the future research section of this study, would provide a much better understanding of PIU and how it affects higher education.

APPENDIX A: ADDICTION SYNDROME MODEL FIGURE PERMISSION

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87

APPENDIX B: SURVEY INSTRUMENT

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UCF College of Graduate Studies
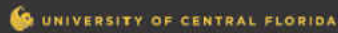
Block 1

EXPLANATION OF RESEARCH

Title of Project: Problematic Internet Use in Residence Halls

Principal Investigator: Graham Quirk

Faculty Supervisor: Dr. Cintrón

You are being invited to take part in a research study. Whether you take part is up to you.

- *The main purpose of this study is to determine the extent that PIU exists in residence halls on college campuses. The secondary purpose is to determine if online activity has the potential to have negative effects on graduation rates.*
- *You must be 18 years of age or older to take part in this research study.*

- *You will be asked to answer 25 questions. 20 of the questions will come from Dr. Kimberly Young's Internet Addiction Test. The survey uses a 5 point Likert scale asking you to rate how often you do various tasks in regards to the internet. The other 5 questions will be demographic questions.*

- *The survey should take you between 5-10 minutes.*

- *If you find yourself getting upset while completing the survey and want to talk to someone, you can contact the Counseling and Psychological Services for UCF at (407) 823-2811.*

Study contact for questions about the study or to report a problem: *If you have questions, concerns, or complaints, contact Graham Quirk, Doctoral student, Higher Education and Policy Studies, College of Education and Human Performance at gquirk@knights.ucf.edu or Dr. Cintrón, Faculty Supervisor, Department of Child, Family, and Community Sciences at (407) 823-1248 or by email at rosa.cintrondelgado@ucf.edu.*

IRB contact about your rights in the study or to report a complaint: *Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901.*

Default Question Block

How old are you?

What is your gender?

Male

Female

When answering the following 20 questions, consider the time spent online for non-academic and non job purposes.

	Not Applicable	Rarely	Occasionally	Frequently	Often	Always
1) Do you often find yourself staying online longer than you intended?	O	O	O	O	O	O
2) Do you often neglect household chores to spend more time online?	O	O	O	O	O	O
3) Do you often prefer the excitement of the Internet to intimacy with your partner?	O	O	O	O	O	O
4) Do you often form new relationships with other online users?	O	O	O	O	O	O
5) Do others in your life often complain to you about the amount of time you spend online?	O	O	O	O	O	O
6) Do your grades or work often suffer because of the amount of time you spend online?	O	O	O	O	O	O
7) Do you often check email or other online messages before something else that you need to do?	O	O	O	O	O	O
8) Do you find that your job performance or productivity suffer because of your Internet use?	O	O	O	O	O	O
9) Do you often find that you become defensive or secretive when others ask what you do online?	O	O	O	O	O	O
10) Do you ever block out disturbing thoughts about your life with soothing thoughts about Internet activities?	O	O	O	O	O	O
11) Do you often find yourself anticipating when you will go online again?	O	O	O	O	O	O
12) Do you ever find that you fear that life without certain Internet activities would be boring, empty, or joyless?	O	O	O	O	O	O
13) Do you often snap, yell, or act annoyed if someone bothers you while you are online?	O	O	O	O	O	O
14) Do you find that you often lose sleep due to late-night log-ins?	O	O	O	O	O	O
15) Do you often feel preoccupied about the Internet when you are offline, or daydream about being online?	O	O	O	O	O	O
16) Do you often find yourself saying "just a few more minutes" or something similar when you are online?	O	O	O	O	O	O
17) Do you often try to cut down the amount of time you spend online and fail?	O	O	O	O	O	O
18) Do you often try to hide how long you've been online?	O	O	O	O	O	O
19) Do often choose to spend time online over going out with others?	O	O	O	O	O	O

20) Do you often feel depressed, moody, or nervous when you are offline, which goes away when you are online again?   ○   ○   ○   ○   ○   ○

How frequently have you taken advantage of the academic support services provided by the University? (Math Lab, University Writing Center, Tutoring, etc...)

Never	Rarely	Occassionally	Often

Are you on Academic Probation?

Yes

No

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APPENDIX C: PEW RESEARCH PERMISSION

Pew Research Center info@pewresearch.org
Mon 2/23/2015 9:01 AM

To:
Graham Quirk;
Hi Graham - Thank you for your inquiry and interest in our work. You do not need express permission in this instance, so feel free to use with proper attribution to Pew Research Center. You can review our use policy here: www.pewresearch.org/usepolicy.

Best regards,
Brian Mahl
Pew Research Center

-----Original Message-----
From: Graham Quirk [mailto:gquirk@knights.ucf.edu]
Sent: Sunday, February 22, 2015 9:40 PM
To: Pew Research Center
Subject: Submission: Permissions

The following message was submitted through the pewresearch.org contact form:

Name: Graham Quirk

Email: gquirk@knights.ucf.edu

Phone: 407-433-2514

Organization: University of Central Florida

Title: Doctoral student

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APPENDIX D: IAT PERMISSION

Kimberly Young netaddiction.com@gmail.com
Mon 2/23/2015 8:12 AM

To:
Graham Quirk;
Graham,

Thank you for your note. There is the free version of the IAT and the
8-item IADQ online at Netaddiction.com. If you wish to purchase a
license for the paper version plus the scoring guide, it is $110
payable via PayPal.

Please let me know if you have further questions.

Dr. Young

On Sun, Feb 22, 2015 at 8:33 PM, Graham Quirk <gquirk@knights.ucf.edu> wrote:
> Name: Graham Quirk
>
> Email: gquirk@knights.ucf.edu
>
> Comments: Hi,
>
> I am a doctoral student and my dissertation will be revolving around Problematic Internet Use. I would
like to use the IAT. Is there a license fee for this purpose and how do I pay it?
>
> Thanks so much for you time!
>
> Graham
>

APPENDIX E: ADDICTION SYNDROME MODEL

Distal Antecedents of the Addiction Syndrome

Neurobiological Elements (e.g., Genetic Risk, Neurobiological System Risk)

Underlying Vulnerability
If Yes

Psychosocial Elements (e.g., Psychological and Social Risk Factors)

If Yes
Immediate Neurobiological Consequences Resulting in Desirable Subjective Shift

If Yes
Object Interaction

If Yes
Exposure to Object or Activity X, Y or Z

Premorbid Addiction Syndrome

Proximal Antecedents (e.g., biopsychosocial events)

Repeated Object Interaction & Desirable Subjective Shifts

Expressions, Manifestations and Sequelae of Addiction Syndrome

Expression

Unique Manifestations & Sequelae

Drinking	Gambling	Smoking	Intravenous Drug Using
e.g., Liver Cirrhosis	e.g., Gambling Debt	e.g., Pulmonary Carcinoma	e.g., Sepsis

Shared Manifestations & Sequelae

Biological Cluster (e.g., tolerance, withdrawal, neuroanatomical changes, genetic expressions)

Natural History (e.g., exposure, relapse rates, temporal sequencing of symptom progression or recovery)

Psychological Cluster (e.g., psychopathology & comorbidity)

Treatment Non-specificity (e.g., CBT, pharmacotherapy)

Social Cluster (e.g., deviant behaviors, delinquency, criminality, social drift)

Object Substitution (e.g., increase in sedative use during decrease in opioid use)

97

APPENDIX F: ADDICTION SYNDROME MODEL – MODIFIED

Distal Antecedents of the Addiction Syndrome

Exposure to Object or Activity X, Y or Z

If Yes

Object Interaction

If Yes

Immediate Neurobiological Consequences Resulting in Desirable Subjective Shift

If Yes

Premorbid Addiction Syndrome

Repeated Object Interaction & Desirable Subjective Shifts

Expressions, Manifestations and Sequelae of Addiction Syndrome

Shared Manifestations & Sequelae

Psychological Cluster
(e.g., psychopathology & comorbidity)

Social Cluster
(e.g., deviant behaviors, delinquency, criminality, social drift)

99

APPENDIX G: INSTITUTIONAL REVIEW BOARD APPROVAL

University of Central Florida Institutional Review Board
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Approval of Exempt Human Research

From: **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To: **Graham William Quirk**

Date: **April 10, 2015**

Dear Researcher:

On 04/10/2015, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review:	Exempt Determination
Project Title:	Problematic Internet Use in Residence Halls
Investigator:	Graham William Quirk
IRB Number:	SBE-15-11226
Funding Agency:	
Grant Title:	
Research ID:	N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual. On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Joanne Muratori

Signature applied by Joanne Muratori on 04/10/2015 10:24:06 AM EDT IRB manager

APPENDIX H: RENN & REASON PERMISSION

License Number	3673321315039
License date	Jul 20, 2015
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Licensed Content Publication	Wiley Books
Licensed Content Title	College Students in the United States: Characteristics, Experiences, and Outcomes
Licensed Content Author	Kristen A. Renn, Robert D. Reason
Licensed Content Date	Nov 1, 2012
Pages	320
Type of use	Dissertation/Thesis
Requestor type	University/Academic
Format	Electronic
Portion	Figure/table
Number of figures/tables	3
Original Wiley figure/table number(s)	Access to Higher Education, Enrollment Numbers, Erikson's Identity Development Theory
Will you be translating?	No
Title of your thesis / dissertation	Problematic Internet Use in Residence Halls
Expected completion date	Jul 2015
Expected size (number of pages)	132

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