AN ABSTRACT OF THE THESIS OF

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Abstract approved:

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In recent decades, there has been a tremendous change in the college student experience. In many ways this change has been driven by developments in technology, which have in turn changed the way students conduct research, socialize, and recreate. This thesis seeks to gain an understanding as to how Internet and videogame use impact the experience of college students. Included in this document is a review of literature pertaining to Internet and videogame use on college students. The author surveyed nearly 200 undergraduate students to compare daily levels of Internet and videogame use, and interpersonal competence as measured using Hood's (1997) Iowa Developing Competence Inventory. The author conducted a statistical analysis to determine whether a correlation existed between these elements. The results of this study as well its implications will be discussed further detail.

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The Impact of Internet and Videogame Use on College Student Development

by
Benjamin W. Calhoun

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APPROVED

College Student Services Administration

Director of Interdisciplinary Studies Program

Dean of the Graduate School

I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

Benjamin, W. Calhoun, Author

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Chapter I

Introduction

In the past two decades, universities and students alike have witnessed a drastic change in many areas of their daily life with the development of the Internet and entertainment technology. This study attempts to investigate how technology, specifically Internet and videogame use, has affected the interpersonal development of college students. While the inspiration for this study was drawn from the researcher's various past observations and experiences, its relevance can be partially illustrated by the experiences of other students. The following is meant to provide background on this topic and its importance.

In the summer of 2008, students in an online communication course were asked to respond to some informal questions about videogames, which were posted in a discussion forum. The questions related to a number of topics, but primarily addressed students' opinions of how videogame play affects society. Students were asked to respond in short essays, and encouraged to expand on any of the questions asked using evidence from personal experience or opinions. The responses were intriguing and addressed a variety of topics and concerns.

A total of thirteen students responded to the questions, and many discussed similar beliefs and concerns. There were four separate mentions of the educational benefit of videogames; seven students mentioned or suggested concerns about violent content in videogames, and three specific references were made regarding the potential for videogames to serve as a training tool for various tasks.

The most noticeable shared concern the students expressed toward videogame use was the potential for dependence or addiction. Nine of the thirteen students mentioned the possibility of videogame addiction as a consequence of game play, and many cited specific instances where family members or friends had experienced what they described as a videogame addiction. In the context of these descriptions, several students singled out *World of Warcraft*, a popular online computer game, as a common source of addiction among video game users (gamers) whom they knew.

The subscription-based game *World of Warcraft* is one of the most popular online computer games currently available, boasting over 10 million paid subscribers from around the world (Alexander, 2008). The game carries a great deal of name recognition and even inspired the popular cartoon *South Park* to write an entire episode to caricature the experience of those addicted to the game. Therefore it may not come as a surprise to see the game mentioned so explicitly.

In sum, the responses from the online discussion board may not say much more than what a small group of college students view to be important or problematic about videogame use, but their responses do suggest a need for further understanding. Technology related issues concerning Internet and videogame use have become a growing concern for universities. In its annual study of undergraduate college students, The EDUCAUSE Center for Applied Research published a number of findings on the role of technology in higher education, but concluded that information and entertainment technology, such as Internet and

videogames, are an integral part of the modern college experience (Salaway & Borreson Caruso, 2008).

Purpose and Scope of Study

As college and university administrators seek to improve the quality of their institution's services, there is a subsequent need to understand the experience of their students. Jones (2003) noted that as many as 70 percent of college students report playing videogames at least occasionally, while Salaway and Borreson Caruso (2008) reported that college students spend an average of nearly 20 hours a week on the Internet for various purposes. Further, the study showed that about 1 in 14 students (7.4%) reported spending 40 hours per week or more on the Internet, the time normally spent per week in a full-time job. Given such figures, it seems strange that there is a lack of research exploring the developmental impact of technologies such as Internet and videogames on college students.

While a limited number of studies have explored the social impact of Internet use on college students (Engelberg & Sjöberg, 2004; Fortson, Scotti, Chen, Malone, & Del Ben, 2007; Hall & Parsons, 2001), the bulk of research on videogames has dealt mostly with the various physiological effects on adolescents, and has almost completely overlooked the college student population. The purpose of this study was to gain basic understanding into the developmental impact of Internet and videogame use on college students.

This study surveyed 187 undergraduate students to determine whether a correlation existed between daily amounts of Internet and videogame use, and

interpersonal competence as described in Chickering and Reisser's (1993) vector model. Interpersonal competence was measured using the Self-Confidence Subscale from Hood and Jackson's (1997) Iowa Developing Competence Inventory.

Rational for Methodology

Creswell (2008) describes correlational research as the best method when a researcher wishes to "describe and measure the degree of association (or relationship) between two or more variables or sets of scores" (p. 356). Because the researcher wanted to investigate the relationship between Internet and videogame use, and scores on the Self-Confidence Subscale from Hood and Jackson's (1997) IDCI, a correlational research design was chosen for this study.

Surveys were selected as the research tool as it was believed their use would allow the researcher access to a greater number of student responses from which to draw analysis and conclusions.

The choice to use students enrolled in an introductory communication course as the sample was made based on the assumption it would provide a reasonable cross-section of students in terms of major and class standing. Each term, the class has historically enrolled students from most majors and every class standing from across the university as it fulfills part of the institutions baccalaureate core requirements, and is required by several academic colleges.

Research Question/Hypothesis

There were two research questions that drove this study. The first research question was: does a significant correlation exist between the amount of daily time spent on the Internet and interpersonal competence as described by Chickering and Reisser (1993)? . The null hypothesis for the first research question (H_o) was that no significant correlation would exist between daily Internet use and interpersonal competence as described by Chickering and Reisser. The alternative hypothesis (H_1) was that a significant correlation would exist between daily Internet use and interpersonal competence as described by Chickering and Reisser.

The second research question was: does a significant correlation exist between the amount of daily time spent playing videogames and interpersonal competence as described by Chickering and Reisser? The coresponding null hypothesis (H_0) was that no correlation would exist between daily videogame use and interpersonal competence as described by Chickering and Reisser. The alternative hypothesis (H_1) was that a significant correlation would exist between daily videogame use and interpersonal competence as described by Chickering and Reisser.

The independent variables for this study were identified as the amount of daily time spent on the Internet, and the amount of daily time spent playing videogames. The dependent variable was identified as the level of interpersonal competence as measured by the total score on the Self-Confidence Subscale of Hood and Jackson's (1997) IDCI.

Definition of Terms

For this study, videogames were generally defined as any electronic entertainment medium that requires user-interaction, thereby producing feedback displayed on some type of video display. They were not limited to one specific type of genre, nor were they limited to a specific interface (i.e. console, computer, etc.). Internet use was also given a broad definition, which encompassed any online activity requiring the use of a web-browser. These two definitions were used under the assumption that they were understood to be the common definition of these two activities and would therefore not be mistaken or misunderstood when students were asked about them on the survey.

Identification of a respondent's level of Internet and videogame use was based on responses to 6-interval Likert scale questions measuring daily use. Responses in the first category (0-1 daily hours) were defined as occasional use. Responses in the second category (1-2 daily hours) through sixth (5 or more daily hours) were respectively defined as follows: light, moderate, frequent, heavy, and very heavy.

Interpersonal competence was defined based on the concept described in Chickering and Reisser's (1993) vector model of student development. Chickering and Reisser's first vector, Developing Competence, is comprised of three elements: intellectual competence, physical and manual skills, and interpersonal competence. They describe interpersonal competence as an "array of discrete

skills, like listening, asking questions, self-disclosing, giving feedback, and participating in dialogues that bring insight and enjoyment" (p. 72).

It should also be noted that the Self-Confidence Subscale from Hood and Jackson's (1997) IDCI was used as a measurement of Chickering and Reisser's (1993) Interpersonal Competence. Its use was appropriate as the subscale was created specifically to measure the concept of interpersonal competence described by Chickering and Reisser (1993). Therefore, although a distinction is made between Self-Confidence and interpersonal competence for the sake of discussion and explanation, the two terms refer to the same theoretical concept.

Summary

The remainder of this thesis will explore the impact of Internet and videogame use on the college student experience by discussing relevant literature on the topic, as well as the details of this study. Chapter 2 will include an overview of relevant literature surrounding Internet and videogame use on the college student experience. Chapter 3 will overview the methodology used for this study. Finally, Chapters 4 and 5 will present and discuss the results from this study.

Chapter 2

Literature Review

The underlying goal of this literature review was to provide an overview of previous research that has examined the ways Internet and videogame use impact the modern college experience. The researcher collected scholarly resources from multiple online databases dedicated to disciplines including higher education, communication, psychology, as well as sources from industry and popular publications. The search for literature began by examining search terms containing words such as college students, Internet, videogames, and interpersonal skills.

First an overview of Chickering and Reisser's (1993) vector model is provided, followed by a discussion of the relevant literature on Internet and videogame research as it pertains to college students and higher education.

Student Development Theory

As Evans, Fortney, and Guido-DiBrito (1998) noted, the bulk of modern college student development theory is divided into four categories: (a) psychosocial theory, cognitive-structural theory, typology theory, and person-environment theory. The theory chosen for the framework of this study falls under the body of psychosocial theory, which according to Evans et al. (1998), "examines individuals' personal and interpersonal lives" (p.10). These theories tend to focus on sequential or compartmentalized stages of development.

The Chickering and Reisser Vector Model

The specific theory used as the frame for this study was the Chickering and Reiser (1993) vector model described in their book *Education and Identity*. This model falls under the category of psychosocial theory, and according to Evans et al. (1998) is one of the most widely cited student development models.

Chickering and Reisser (1993) described student development using a seven-part model, referring to each part as a vector. Each vector addressed a specific facet of student development. The vectors included: (a) Developing Competence, (b) Managing Emotions, (c) Moving though Autonomy Toward Interdependence, (e) Developing Mature Interpersonal Relationships, (f) Establishing Identity, (g) Developing Purpose, (h) and Developing Integrity.

This study focused specifically on Chickering and Reisser's (1993) first vector, Developing Competence. The authors likened the components of this vector to the tines of a three-pronged pitchfork. The three components that make up this vector are intellectual competence, physical and manual skills, and interpersonal competence. The aggregate of these components is what the authors described as a student's overall sense of competence. This sense of competence is said to increase as students "learn to trust their abilities, receive accurate feedback from others, and integrate their skills into a stable self-assurance" (p. 46). In other words, while there are individual components that make up the concept, a student's overall sense of competence depends on their ability to make the individual components successfully interact.

Interpersonal competence, the third component of the Developing Competence vector, was chosen as the most applicable for the purposes of this study. This component is described by Chickering and Reisser (1993) as consisting of "an array of discrete skills like listening, asking questions, self-disclosing, giving feedback, and participating in dialogues that bring insight and enjoyment" (p.72). This component also relates very closely with issues of interpersonal communication in various contexts. Some of these contexts include a student's ability to communicate or work effectively in groups, to stay focused in conversations as well as an ability to empathize or relate to others.

According to Chickering and Reisser (1993), a student's sense of self-competence "is directly related to the reality of their competencies" (p.78). The authors suggest that while a student's sense of competence can be measured by observing individual behaviors, the overall concept is subjective, and has more to do with "how students feel about the worth of their accomplishments" (p. 77).

Chickering and Reisser (1993) noted that development of college students happens at different rates, and takes place in different ways. They likened their vector model to "major highways for journeying towards individuation" (p. 38). This also means that assessing progress along any given vector within the model should be done though a plurality of measures rather than by measuring success with one particular skill, or response to an individual question.

Assessment of Interpersonal Competence

As mentioned by Chickering and Reisser (1993), the measurement of interpersonal competence has to do with students' perception of their own success and less to do with an objective measurement or observation of behavior. Hood and Jackson (1997) suggested that interpersonal competence could be measured through self-assessment style questions dealing with three intercorrelated categories: (a) self-confidence with superiors, (b) confidence with peers, (c) and competence in smooth communications. Thirty questions were then compiled (ten for each category) to create what was titled the Self-Confidence Subscale, which was meant as a measurement of the interpersonal competency concept described in Chickering and Reisser's (1993) vector model. The questions dealt with an array of communication and interpersonal issues related to Chickering and Reisser's description of interpersonal competence.

Internet and higher education

In a 2002 study conducted by the Pew Internet and American Life Project, Jones found that college students use the Internet in significantly larger numbers than the regular population: 86% of college students, compared to 59% of the normal population. The study also indicated that one fifth of students began using computers between the ages of 5 and 8, while the remainder began using computers by the time they were 18 years old, which unsurprisingly indicates that students are familiar with computer technology before they attend college.

College students use the Internet for a variety of reasons. Salaway and Borreson Caruso (2008) noted that research, communication, and recreation are the most commonly reported uses among college undergraduates. Nearly half of the students surveyed by Jones (2002) identified communication as their primary reason for using the Internet. Eberhardt (2007) supported this finding by noting that between 85% and 82% of college undergraduates use the social networking site Facebook.

Suhail and Bargees (2006) noted that the Internet is also a very useful tool for enhancing academic skills and achievement through enhanced efficiency and allowing greater access to information. However, Salaway et al. (2008) noted that despite the growing popularity of Internet and information technology in higher education, college students still generally prefer only a moderate degree of integration with respect to such technologies in the classroom. Students consistently emphasized, "that technology should not eclipse valued face-to-face interaction with instructors" (p.11).

Researchers have reported mixed findings in terms of how Internet use affects students. While Campbell, Cumming, and Hughes (2006) contended that online activities such as online chats could serve as useful mechanisms for socially phobic people to deal with social anxiety issues. Many other studies have suggested that overuse of the Internet positively correlates with not only deficient interpersonal relationships, but increased levels of social anxiety and other social issues as well (Engelberg & Sjöberg, 2004; Fortson et al., 2007; Hall & Parsons,

2001). Özcan and Buzlu (2007) suggested that college students are among the most likely population to suffer from Internet dependency related issues. Young (1998) also noted that Internet users who identified themselves as dependent were much more likely to suffer from academic, relationship, and occupational hardship when compared with more casual users.

Researchers from around the world have noted the impact of Internet use on college students. Chuo (2001) noted that Taiwanese students generally identified their Internet use as positive, and indicated that it can have significant benefits in terms of maintaining relationships through email, chat programs, etc. It was also noted, however, that dependency was an issue for many students. Simkova and Cincera (2004) observed issues of overuse and dependence among Czech students, while Suhail and Bargees (2006) reported similar issues among Pakistani students.

Student Internet Activity

It would be nearly impossible to gain a comprehensive understanding of all the Internet activity of college students, but research clearly indicates trends in Internet useage among college students. One of the most salient is the use of social networking websites. Ebernhardt (2007) pointed out that the vast majority of college students (82% - 85%) use the networking site Facebook. Facebook has grown to be tremendously popular, boasting 175 million active users, nearly half of which are either in college, or college age ("Facebook | Statistics," 2009). Junco and Cole-Avent (2008) also noted the popularity of Myspace, a similar social

networking site. The website is used for much the same purpose as Facebook, but has also gained notoriety for its ability to let users interact with and listen to bands and musicians online.

Some universities have tried to take advantage of Facebook in order to promote campus services and events. Multiple authors (Charnigo & Barnett-Ellis, 2007; Chu & Nalani Meulemans, 2008) have discussed the trend of American university libraries using Facebook to promote such services. Charnigo and Barnett-Ellis (2007) also pointed out that some university computing facilities have even been forced to ban the use of the website due to bandwidth concerns.

Students have also been using the Internet to post personal content through video and blog sites. Junco and Cole-Avent (2008) discussed the growing popularity of these websites, and suggested they are still growing in popularity. Students also use the Internet for academic purposes. Jones (2002) reported that students often use email for interacting with professors and inquiring about campus or academic services. He went on report that perhaps most startlingly, only 9% of students reported that they use the library more than the Internet for research purposes.

Videogames and Higher Education

Videogames are a common element in the lives of many students. Jones (2003) noted that 70% of college students play videogames at least occasionally. The impact of games on the lives of college students is however fairly complex when considering the countless game genres and titles that exist.

Haines and Haubenreiser (2007) noted in their study of over 20,000 college students that 15% reported that Internet and videogame use had detrimentally affected their academic performance in some way. Jones (2003) reported similar findings, noting that half of student gamers reported videogames had kept them from their academic studies at least some of the time.

Videogames have also been identified as a means for students to socialize. Jones (2003) noted that two thirds of students identify videogames as a resource for enhancing their ability to socialize with friends. Beck and Wade (2006) also noted that is it especially common for students to use console gaming (via Playstation, Xbox, etc.) as a means to socialize.

Games Students Play

Jones (2003) noted that college students' preferences for specific videogames were highly tied to a game's graphics, content, and level of interactivity. Evidence also suggests that gender may account for some preference among college gamers. Ogletree and Drake (2007) reported that men were more likely to play videogames for longer periods of time per week than women, which may suggest that men have a preference for more complex games that require a larger time commitment. Shields (2006) supported this claim, noting that women make up the largest demographic for the more casual genre of online games, which are generally accessed through Internet gaming websites and played for shorter periods of time.

According to the 2007 Nielsen Research survey, the most played computer game that year was *World of Warcraft* (Gyimesi, 2007). Gamers spent, on average, more than twice the amount of time per week playing *World of Warcraft* (1043 minutes) than its next competitor *Halo* (510 minutes). *World of Warcraft* falls into a genre of videogames known as massively multiplayer online games (MMOG). MMOG are often characterized by the large quantities of time their players dedicate to them. Yee (2006a) made a similar observation, pointing out that MMOG gamers spend an average of 22 hours per week playing, while also pointing out that 60% of users reported playing for ten consecutive hours or more at least once.

Griffiths, Davies, & Chappell (2003) noted that the nature of these games creates the potential for gamers to become more heavily involved than other videogame genres, often playing for many hours at a time. MMOG are often played within online worlds composed of thousands of other players, where players can work together to achieve goals and obtain objects beneficial to game play. These games are designed without any distinguishable end, which encourages game play to continue on in perpetuity (Ng & Wiemer-Hastings, 2005).

Lo, Wang, and Fang (2005) found that a correlation existed between increased time spent playing online games and higher levels of social anxiety as well as deficient interpersonal relationships. This is especially startling when considering that in one study, half of MMOG gamers identified themselves as

addicted when asked in a direct yes/no survey question (Yee, 2006a).

Cole and Griffiths (2007) point out that negative social effects are more common for gamers who play MMOG because, "Players can become fixated on their virtual characters, striving to obtain the best armor, experience, and reputation in the game, ignoring that their grades are dropping and their friends have drifted away from them" (p. 2).

Messerly (2004) asserted that these games constitute a clear hazard to the scholastic potential of college students who play them due to the risk of overuse. Lo, Wang, and Fang (2005) suggested that "the brief sense of satisfaction that comes with playing an online game encourages overindulgence in virtual social relationships at the expense of real world friendships" (p. 19). Young (2006) has also claimed that MMOG gamers are far more likely to illustrate symptoms that resemble other more widely recognized addictions such as withdrawal from family and friends, lying or hiding game use, and continuing to play despite negative consequences.

While many researchers have focused on the negative effects of these games, other studies have not been so quick to criticize. Ng and Wiemer-Hastings (2005) concluded that MMOG gamers do not fit the typical profile of addicts because despite the undeniable tendency for gamers to spend large amounts of time playing, the subjects of their study were willing to find opportunities for entertainment elsewhere when game play was not an option.

Some researchers have suggested that taking such a negative stance toward

the use of these games potentially overlooks the high level of social interactivity, which is not present in other game genres. Cole and Griffiths (2007) reported that two thirds of MMOG players believe their gaming habits have a positive impact on their social life. Yee (2006a, 2006b, 2006c) has noted that MMOG are often host to very intricate and dynamic social interactions. He reports that many gamers engage in long-term plutonic and romantic relationships, even virtual marriages with other players within these online worlds.

Summary

Multiple conclusions can be drawn from the literature currently available on Internet and Videogame use among college students. While the existing literature on Internet use clearly suggests that Internet use is an integral part of college life for most students, the specific online activities vary a great deal. The same is true for videogame use. While some games and gaming methods lend themselves to real life social interaction, others appear to produce a highly social platform within online worlds. Currently, little substantive research exists into how each of these activities affect the developmental processes of college students.

Chapter 3

Methodology

This chapter outlines the methodology used to carry out this study. Details on the goal of the research, the setting and sample population, as well as details regarding the instrumentation of this study are included.

Research Goal

The intent of this research was to gain a basic understanding into how the use of Internet and videogames affect the interpersonal development of college students. A review of the literature revealed that both Internet and videogame use were related in some way to interpersonal relations, however no consensus existed on whether the effects are positive or negative. It also revealed a lack of research and knowledge with regard to how Internet and videogame use affects college student development. Therefore a simple quantitative approach was designed to determine whether these variables correlated either positively or negatively with college student development, specifically with regard to interpersonal competence.

Research Setting and Participants

The study was conducted at a mid-sized, four-year, public institution in the western United States. At the time of the most recent public profile, the university enrolled just under 16,000 undergraduate students, the majority of which (85.9%) were considered full time. The majority of students (86.8%) were also under the age of 25.

A convenience sample method was used to obtain the data for this study. The

researcher determined that an introductory communication class would be an appropriate venue for conducting the research. Because the selected class was required by nearly every academic college on campus as a component of the baccalaureate core, it had usually enrolled a diverse cross section of students in terms of academic standing, age, gender and academic college. It was believed that data obtained from this group of students would be more representative of the entire university population that from students from some other venue. At the time the survey was administered, the class had 263 students enrolled. While a total of 205 surveys were collected, it is uncertain how many students were in attendance in the day the survey was administered.

Instrumentation

A survey was designed using the Self-Confidence Subscale from Hood and Jackson's (1997) Iowa Developing Competence Inventory (IDCI), in combination with various other demographic questions. The added demographic questions measured daily Internet and videogame use, as well as factors such as age, class standing, major (which was later categorized by academic college after data collection) and other questions that explored various Internet and videogame habits.

The IDCI is included in a list of inventories in Hood and Jackson's (1997) The Iowa Student Development Inventories. The compilation of survey inventories was designed to measure each of Chickering and Reisser's (1993) vectors of development. While Hood and Jackson's (1997) Developing Competence

Inventory consisted of three subscales designed to measure two of the three aspects of competence. Only the Self-Confidence Subscale was utilized in the study. The two additional subscales, which were both designed to measure intellectual competency were not included in this study.

Few standardized methods exist for assessing interpersonal competence. However, Hood and Jackson's various inventories have been used for multiple studies framed with Chickering and Reisser's (1993) vector model. Flowers (2002) incorporated the inventories for a study on the development of purpose among college students, while Zhang (2008) used the inventory for an examination of student autonomy in Hong Kong. Paul Joseph (1995) also included the Self-Competency subscale in his study on student involvement.

In total the survey used in this study contained 42 questions, 30 of which were taken from the Hood and Jackson's (1997) IDCI, the remaining 12 were created based on information gathered from the literature and from feedback by the thesis committee members. The majority of questions on the survey were Likert scale style questions. This included all of the IDCI questions, and three of the questions from the demographic section. Two open-ended questions were also included in the demographic section, which asked students to name the websites they visited most, as well as their most-played videogames.

Content Validity

In order to establish content validity for the instrument, the survey was distributed to members of the thesis committee for feedback and suggestions. As a

result of the feedback changes were made to include demographic questions that determined major, place of residence, and whether or not students owned a computer. Changes were also made to basic formatting and question order. Only one change was made to questions from the IDCI: wording to question seventeen, replacing “club function” with “school function.”

The survey was then administered to several graduate students, an adjunct faculty member, and an international student to measure completion time, and insure the survey was comprehensible. Using feedback from the volunteers, various minor corrections were made before the survey was finalized, and submitted to the Institutional Review Board.

Procedures

Upon identification of the sample population, a request was made weeks ahead of time for permission to use the communication class for this research. Permission was granted under the condition that the time used to administer the survey did not exceed 15 minutes. This was taken into account during the design process. Approval was also obtained from the Institutional Review Board to conduct the study before the surveys were administered.

The survey was administered in paper form to every student in attendance. Surveys were designed so that all responses would be kept anonymous. Before the surveys were passed out, a prepared statement was read aloud explaining that the research was not connected to the class, and that participation was completely voluntary. Students were also informed that any data collected would be kept

confidential.

Data Analysis

Of the 205 surveys collected, only 187 were determined to be acceptable for the study. Numerous surveys were discarded because questions on the IDCI were omitted, thereby invalidating the total score, or because students failed to indicate their daily Internet or videogame usage. The surveys were then coded into Microsoft Excel and then transferred to the Statistical Package for the Social Sciences software for statistical analysis. Regression analysis was then used to measure correlations within the data.

Chapter 4

Results

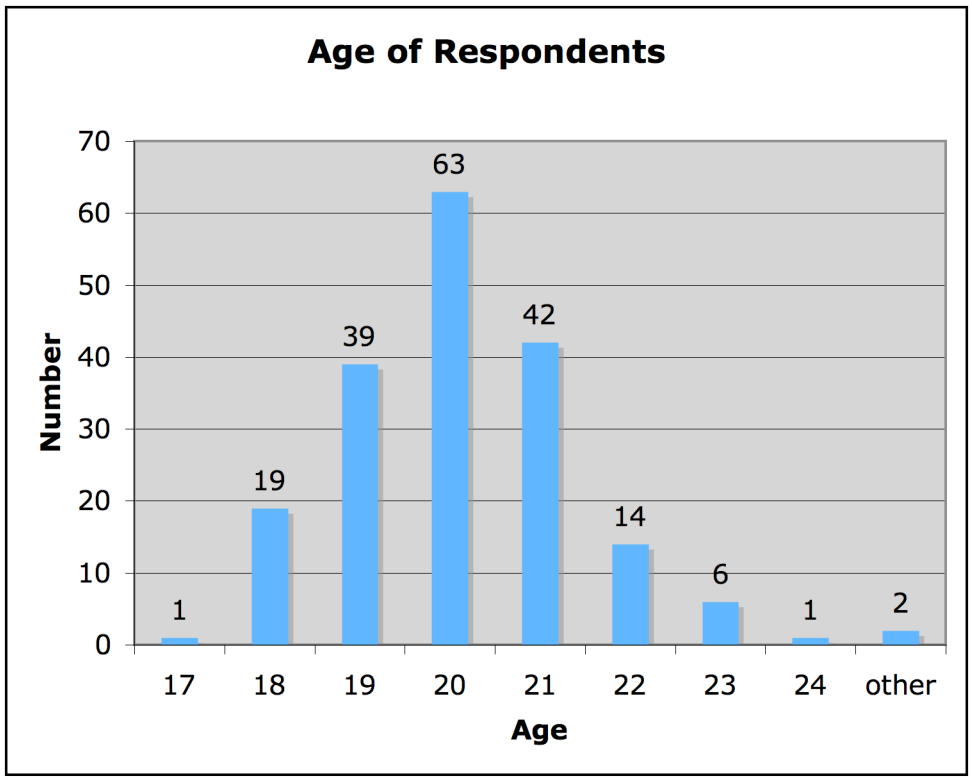
This study sought to investigate whether a correlation existed between Internet and videogame use, and interpersonal competence as described by Chickering and Reisser (1993). The data obtained from this survey revealed a number of findings with regard to the sample population. From the collected data, the researcher was able to make observations with regard to demographic information including area of study, age, and gender. Furthermore, the study revealed important findings into the habits and behaviors of the sample population with regard to Internet and videogame usage. Finally, the study explored the correlation between Internet and videogame usage, and interpersonal competence as described by Chickering and Reisser (1993), using scores from the Self Confidence Subscale from Hood and Jackson's (1997) Iowa Developing Competence Inventory (IDCI) as an assessment tool.

Demographics

The sample for this study consisted of 274 students enrolled in an introductory communication course. While it is uncertain how many students were actually in attendance when the survey was administered, 205 surveys were collected. From that, 187 surveys were determined to be useful for the study. From the 187 surveys used in this study, a noticeably uneven distribution of gender was observed. This reflected the gender breakdown of the class as 180 males were enrolled, compared to 94 females.

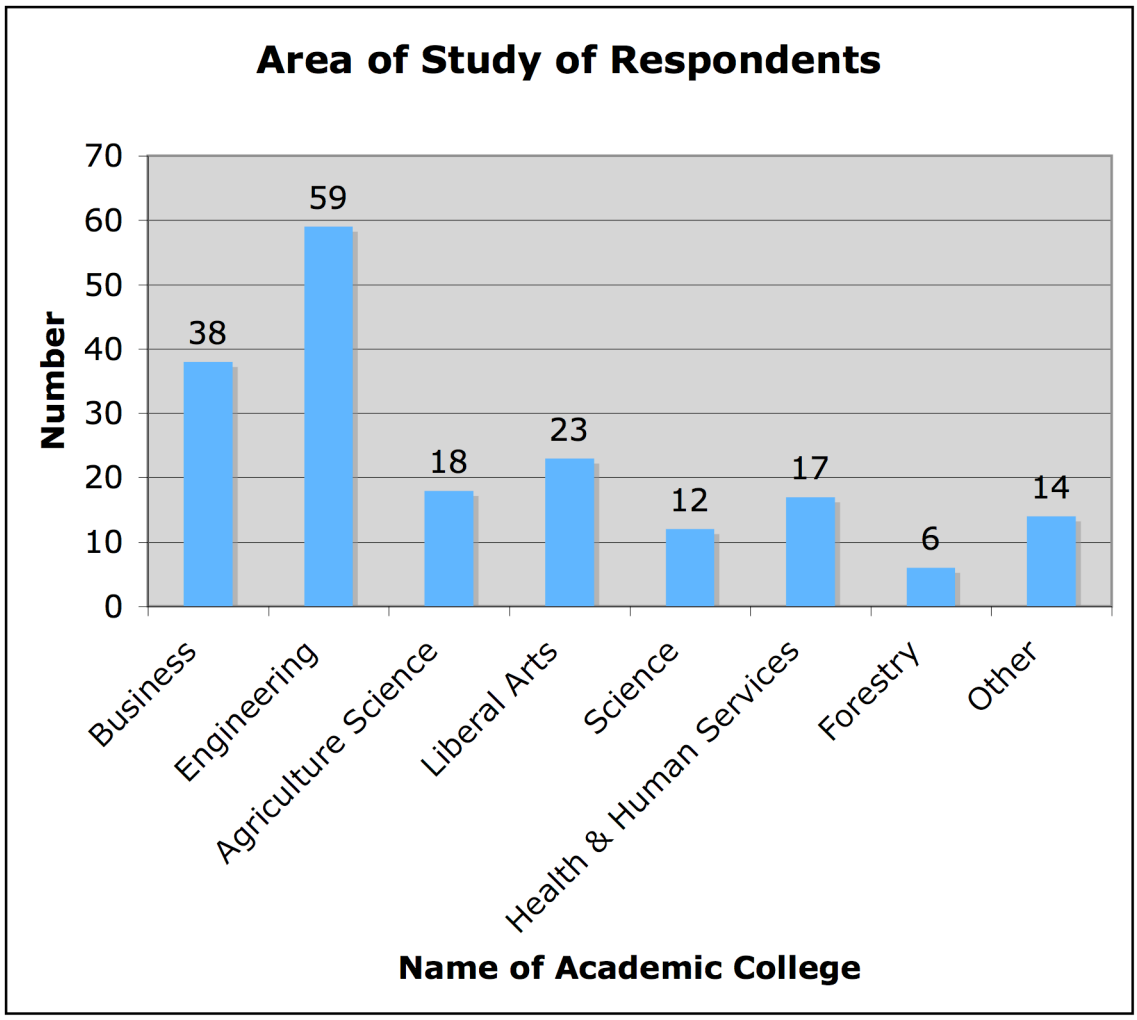
A total of 117 males (62.6%) responded to the survey, while only 70 females responded (37.4%). The age of respondents was closely grouped as nearly the entire sample (99%) fell between the ages of 18 and 24 **(**See Figure I**).**

Figure I: Age of Respondents



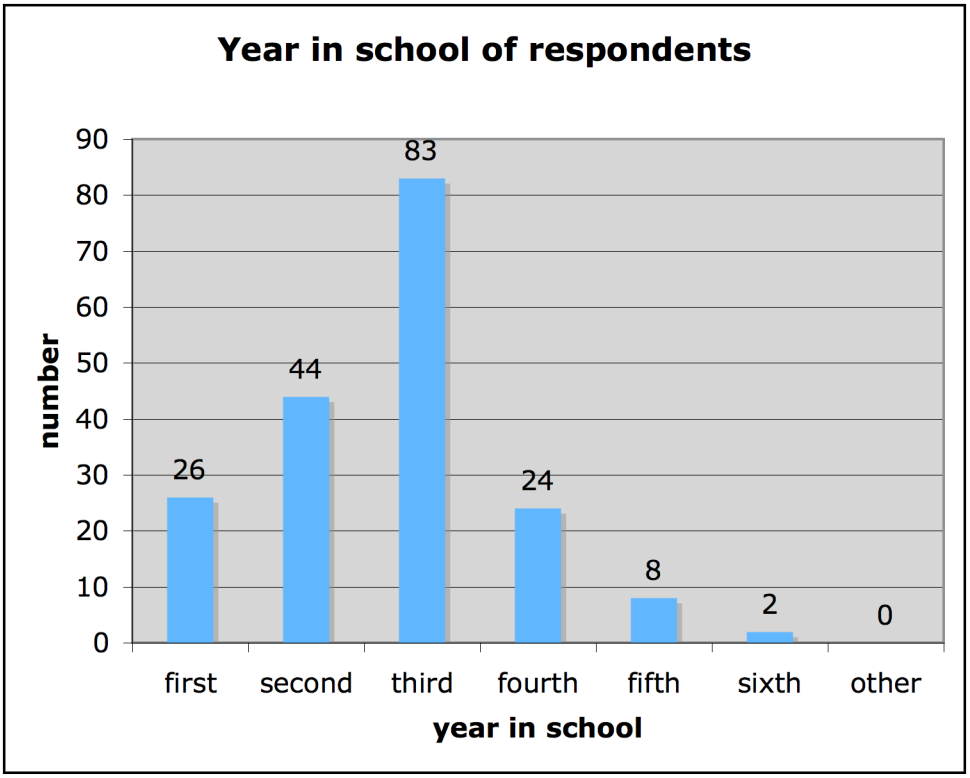
Every college in the university offering a stand-alone, non-professional major was represented in this sample. The largest group of students came from the College of Engineering (31.6%) while the second and third most common came from the College of Business (20.3%) and the College of Liberal Arts (12.3%) respectively **(**See Figure II**).**

Figure II: Area of Study of Respondents



The majority of students were housed off campus (72.2%) while the remaining students lived on campus. The largest group of students identified themselves in their third year of school (44.4%). Second-year students represented the second largest group (23.5%) while first-year students and fourth-year students accounted for 13.9% and 12.8% respectively. Only a small number of fifth-year and sixth-year students were observed (See Figure III).

Figure III: Year in School of Respondents

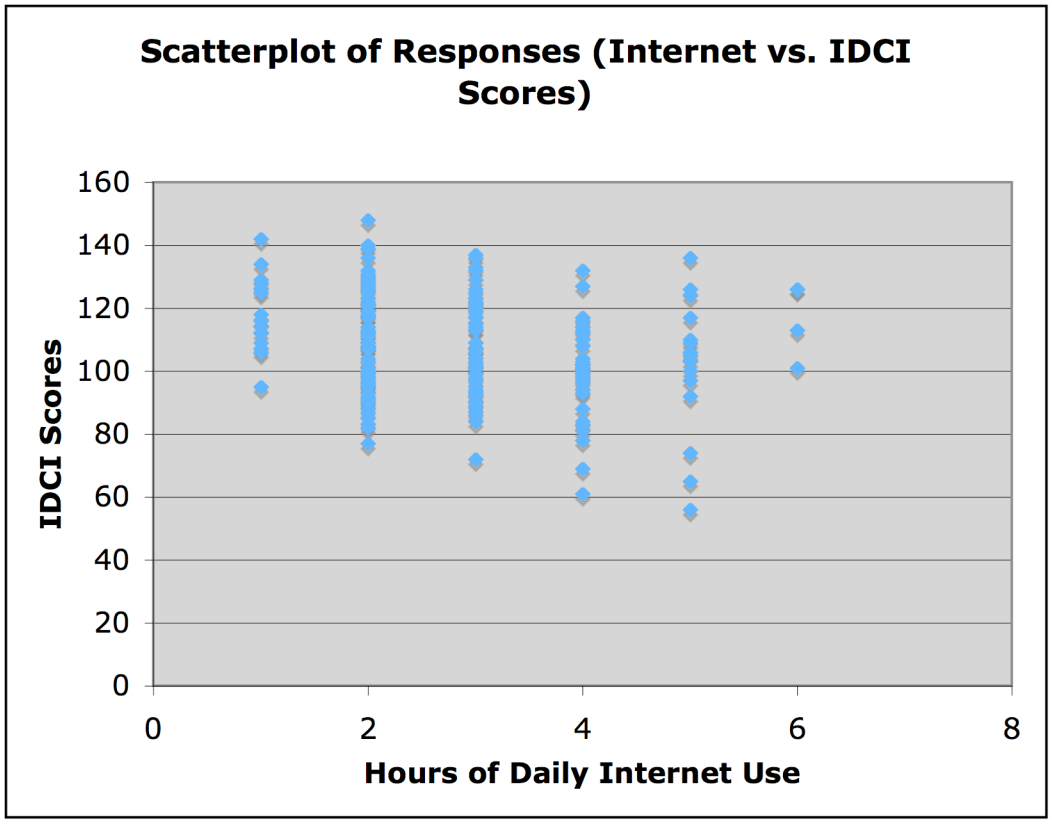


Nearly all of the respondents owned computers (98.9%). Similarly, only a slightly smaller percentage identified themselves as daily Internet users (97.9%). In total, 92% of respondents said they used the Internet one to two hours per day. By contrast, a much smaller percentage of students identified themselves as having played video games for more than one to two hours per day (27.3%). However, when asked in an optional question to identify a preferred gaming method, 83.4% of students noted a specific preference, which indicates at least some level of familiarity with videogame play.

Research Question 1

The first research question of this study sought to determine if a significant correlation exists between the amount of daily time spent on the Internet and interpersonal competence as described by Chickering and Reisser (1993). The mean score of for Internet use per day was 2.89 with a standard deviation of 1.19 (see Figure IV).

Figure IV: Scatterplot of Responses (Internet vs. IDCI Scores)



A correlation test was performed to measure the strength of the relationship between hours spent on the Internet per day and scores on Hood and Jackson's

(1997) IDCI. The test identified a weak negative correlation (r = -.324) with a significance value under .05 (p = .001)

(See Table I).

Table I: Correlation Between Time Online and IDCI Scores

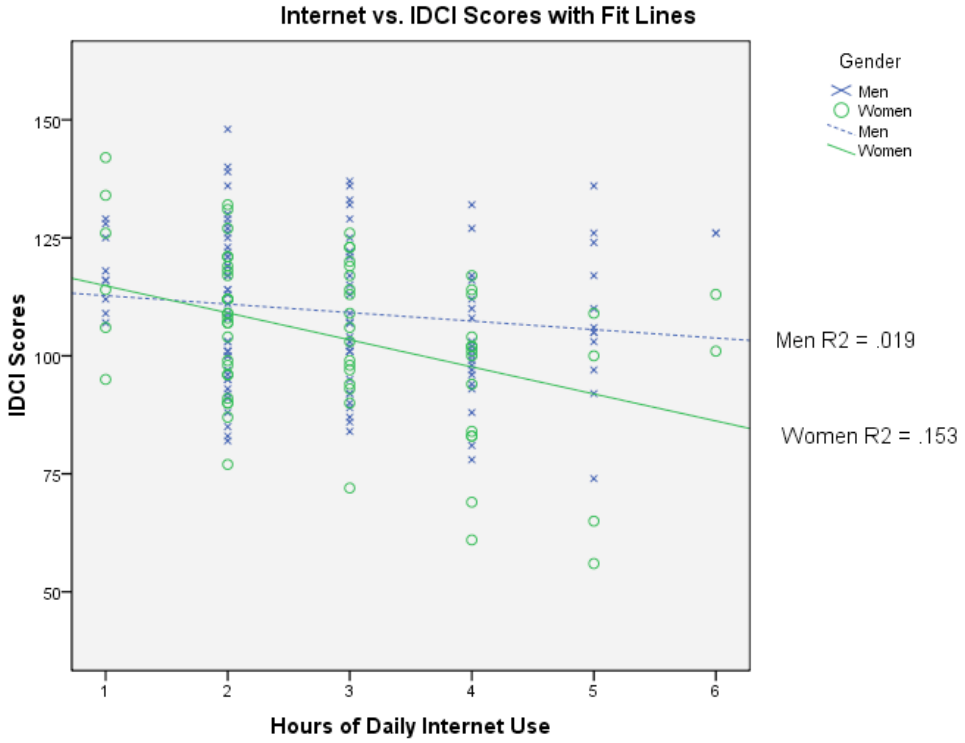
	Surveys Analyzed	**Correlation Strength**	**R^2**	**Significance**
Internet/day vs. total inventory score	**187**	**-.234**	**.054**	**.001****

** Significant at the 0.01 level (2-tailed)

Further analysis was conducted to detect confounding variables within the collected demographic data by looking for significant relationships between daily time spent online, and area of study, age, gender, and year in school. A weak but significant relationship was observed between gender and daily Internet use. No other correlations were found.

With respect to gender and daily Internet usage, regression analysis revealed that while females in this sample demonstrated a higher mean IDCI score with little to no Internet use, the effect of daily Internet was significantly stronger than males. The slope of the fit line for females showed a decrease in IDCI scores of nearly 4 points (-3.929) with each incremental increase of daily Internet use. (See Figure V).

Figure V: Internet vs. IDCI Scores with Fit Lines



Regression analysis revealed that while females in this sample demonstrated a higher mean score with little to no Internet use, the effect of daily Internet was significantly stronger than males. The slope of the fit line for females showed a decrease in IDCI scores of nearly 4 points (-3.929) with each incremental increase of daily Internet use.

The analysis also revealed a difference in the correlation strength between men and women. Males showed an insignificant (p = .144) R^2 value (R^2 = .019) noticeably lower than females (R^2 = .153) at a significance level of .053. While the R^2 value for males suggests that no relationship existed between Internet and IDCI

scores, the R^2 value for females ($R^2 = .153$) means about 15% of the variation observed in the data set can be explained through the observed correlation.

This led the researcher to conclude that while a significant negative correlation existed for the entire sample set, when analyzed for gender, females showed lower IDCI scores as Internet use increased than males who's scores stayed fairly consistent with increased internet use.

Based on these findings, the researcher was able to reject the null hypothesis H_0 with respect to the first research question in favor of the alternative hypothesis H_1, that a significant correlation exists between daily Internet use and interpersonal competence as described by Chickering and Reisser (1993).

Research Question 2

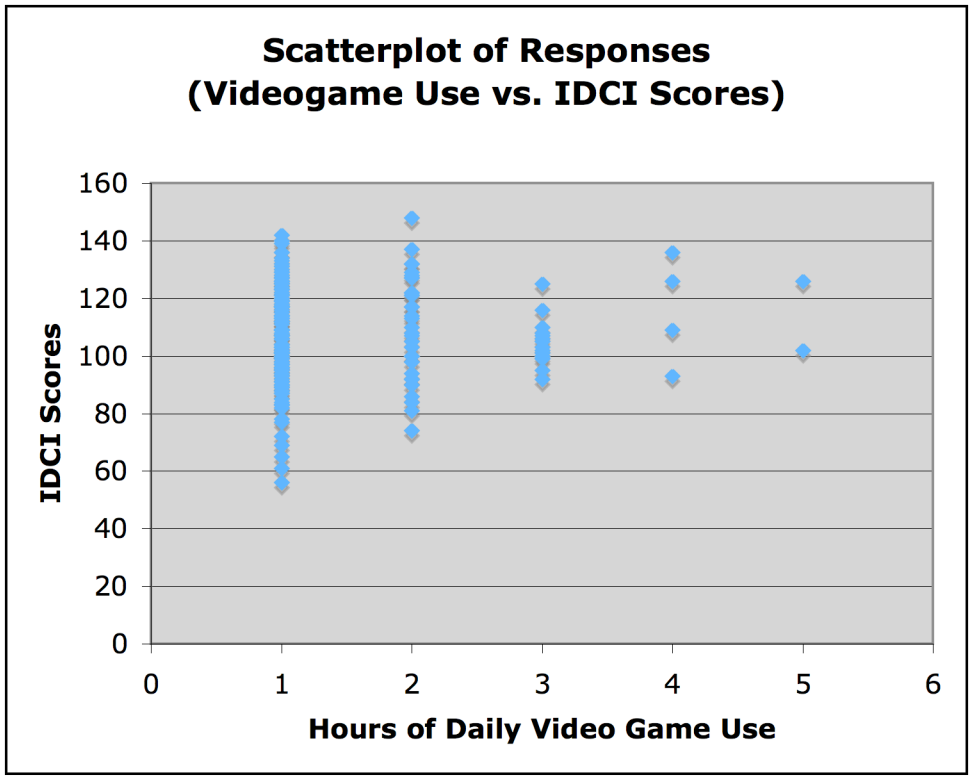
The second research question of this study sought to determine if a significant correlation exists between the amount of daily time spent playing videogames and interpersonal competence as described by Chickering and Reisser (1993). A second correlation test was performed to measure the strength of the relationship between hours spent playing videogames per day and scores on Hood and Jackson's (1997) IDCI, revealing no correlation ($r = .064$) with a significance level (.388) well beyond the standard measure generally used in the social sciences (See Table II).

Table II: Correlation Between Time Playing Videogames and IDCI Scores

	Surveys Analyzed	**Correlation Strength**	**Significance**
Videogames/day vs. total inventory score	**187**	**.064**	**.388**

Although no correlation was found, the distribution of data in terms of videogame use was not evenly distributed, which is generally preferred when performing this kind of correlation test (See Figure VII). Therefore while no correlation was observed, it is possible this was the case because the basic assumptions for the statistical test were not met. Statistical analysis made with regard to how videogame play correlated with IDCI scores would have been strengthened had more individuals identified themselves as moderate to heavy gamers, however, the null hypothesis H_0 for the second research question, could not be rejected.

Figure VI: Scatterplot of Responses (Videogame Use vs. IDCI Scores)



Other Findings

The researcher also ran tests to determine whether area of study, age, gender, or year in school correlated with the total score on Hood and Jackson's (1997) IDCI. Analysis revealed an extremely low, but significant, negative correlation ($r = -.151$) between gender and total scores on the IDCI (See Table III). No other correlations were found with regard to the other demographic categories, which suggested that these variables did not play a role in explaining the variance in the observed data.

Table III: Correlation between time playing gender and IDCI scores

	Surveys Analyzed	Correlation Strength	Significance
Gender vs. total inventory score	187	-.151	.039

The observed mean IDCI scores for men and women were consistent with Hood's (1997) reliability studies. In this sample, men recorded a mean IDCI score of 109.36 while women recorded a slightly lower score of 104.98 This is similar to Hood's findings in which an undergraduate student population sample recorded mean scores of 106.76 and 101.99 on the IDCI for men and women, respectively. In both samples, women recorded slightly lower mean IDCI scores.

Summary

The results from the survey allowed the researcher to make a meaningful conclusion regarding the first research question; that a significant negative correlation existed between the amount of daily time females spent on the Internet and interpersonal competence, as described by Chickering and Reisser (1993). While a significant correlation did exist for entire sample population, only females' scores correlated with the decline in IDCI scores. No correlation was observed between videogame use and interpersonal competence, although this was possibly due to the small number of individuals who identified as having played more than one hour of videogames per day.

Chapter 5

Discussion

The intention of this study was to examine the relationship between Internet use, videogame use, and interpersonal development as described by Chickering and Reisser (1993). The first research question in the study was: does a significant correlation exist between the amount of daily time spent on the Internet and interpersonal competence as described by Chickering and Reisser? The second research question was: does a significant correlation exist between the amount of daily time spent playing videogames and interpersonal competence as described by Chickering and Reisser?

Two null hypotheses were created, one for each research question. The null hypothesis (H_0) for the first research question was that no correlation would exist between daily Internet use and interpersonal competence as described by Chickering and Reisser (1993). The alternative hypothesis (H_1) was that a significant correlation would exist between daily Internet use and interpersonal competence as described by Chickering and Reisser. For the second research question, the null hypothesis (H_0) was that no correlation would exist between daily videogame use and interpersonal competence as described by Chickering and Reisser. The alternative hypothesis (H_1) was that a significant correlation would exist between daily videogame use and interpersonal competence as described by Chickering and Reisser.

With regard to the first research question, the evidence supported the rejection of the null hypothesis (H_0), as a weak, yet significant negative correlation ($r = -.234$) was observed between daily time spent on the Internet and interpersonal competence. No correlation was observed with regard to the second research question, therefore the corresponding null hypothesis could not be rejected.

This chapter will discuss the study's findings with regard to each of the two research questions, including the rejection of the null hypothesis for the first research question, and the inability to reject the null hypothesis for the second question. The implications of these findings, as well other observed findings will also be discussed. Finally, the limitations and concerns surrounding this study will be presented.

Research Question 1

This study concluded that a weak but significant negative correlation exists between daily time spent on the Internet and interpersonal competence. This is fairly consistent with the findings of other researchers (Engelberg & Sjöberg, 2004; Fortson et al., 2007; Hall & Parsons, 2001) who have studied the impact of Internet use on similar factors such as social anxiety and relationship issues. However, as is true with other correlational studies, the findings in this study do not explain whether college students are affected by their use of the Internet, or if students who would normally exhibit lower levels of interpersonal competence are led to spend more time online for other reasons.

While other studies (Campbell et al., 2006; Chou, 2001; Engelberg & Sjöberg, 2004) have shown similar correlations between Internet use and other social factors, this is perhaps the first study to show an impact through the lens of college student development literature. However, this study's findings only provide a base from which to work. Many questions still remain on this topic.

Social Networking

What is interesting to consider is the idea of how quickly the online world can change. In 2003, Facebook did not even exist, whereas it is now touted as one of the most popular websites on the Internet, even while still growing in popularity. One of the problems with research on this topic is that studies can be arguably obsolete relatively quickly. Therefore much of the research that has been done on Internet use and online habits can easily be called into question if it is more than a few years old, or if it was published before the latest online phenomenon.

The observed correlation for this question, while significant, was somewhat weak. It might not be unreasonable to think that before the introduction of social networking, increased time spent online may have correlated to even lower levels of interpersonal competence. However, given the ostensibly superficial level of interaction that takes place through social networking websites, one should also be open to the possibility that these activities may have a detrimental effect on students' ability to develop in-depth or mature relationships.

Another factor to consider is how gender plays into the question of social networking and student development. In the sample for this study, there was a noticeable interaction between gender and the interpersonal development of students based on daily Internet use. Further studies might examine how gender correlates to different use age habits with regard to social networking and whether or not these differences play into students' development. Whatever the case, more research is needed to more fully understand how websites like Facebook and other social networking websites are influencing students on a developmental level.

Gender

This study showed a noteworthy difference in how gender played into Internet use and interpersonal development. Females were shown to exhibit lower levels of interpersonal competency as their daily Internet use increased. The reasons for this are somewhat unclear, however Carol Gilligan's theory on women's moral development might help provide an explanation for the difference.

Gilligan (1982) contended that the developmental processes for men and women were fundamentally different. She argued that while men generally build their relationships and worldviews though "an abstract world justice" (p. 187), women focus more on relational context. Gilligan's three-stage developmental theory suggests that women, who are in the early stages of what she described as moral development, are more likely to exhibit isolating behaviors. Conversely, women who are further developed would spend more energy building relationships, and less time in activities that would separate them from friends.

While this study did not implement Gilligan's theory into the design and cannot make any empirical claims, it logically follows that a female student who would register a low score in Hood's (1997) IDCI, might also be more likely to fall within the initial stages of Gilligan's theory. If this is the case, this same student might prefer to allocate more daily time to individual or isolating activities such as Internet use, rather than making an effort to socially engage with others.

Evans et al. (1998) supports this notion further in a discussion of women's student development theory, citing that women are likely to develop their sense of identity through their relationships with others, while men tend to develop their identity through competency and knowledge. Given such a premise, it is understandable that women could experience lower levels of interpersonal development if they allocate more of their daily time to online activities away from real-life social interaction.

While the previously mentioned literature does not explore the developmental processes as closely for men, it does provide a basic reasoning for why no significant change in interpersonal competence was observed as daily Internet usage increased. If men develop relationships by focusing on elements other than context and attachment to others, it would make sense that as a group, they can spend more daily time online, and still exhibit similar levels of interpersonal competence.

Research Question 2

The second research question of this study sough to determine if a correlation exists between daily time spent playing videogames and interpersonal competence. Based on the data collected, the alternative hypothesis could not be accepted, nor could any meaningful statistical conclusions be made. This had in large part to do with the small number of students who identified themselves as moderate or high players of videogames, which resulted in an uneven distribution of data.

The strength of the analysis made regarding the second research question had in large part to do with the uneven distribution of data needed to perform the required correlation tests. Few students identified themselves as moderate to light to heavy gamers, while most identified themselves as occasional gamers. Furthermore, even fewer students identified themselves as players of massively multiplayer online games (MMOG). Therefore, any future study that seeks to gain an understanding of this particular activity would likely find more success by targeting a specific sample population of moderate to heavy gamers. This might be accomplished by either identifying a significant number of gamers to be surveyed, or perhaps through qualitative analysis of the habits of this population.

One of the surprising findings from this study is that no students identified themselves as very heavy gamers, or having played 5 or more hours of videogames per day. Similarly, only two individuals identified themselves as having played four to five hours per day. This indicated that, at least for this sample, that

videogame use in large daily hours was not a common occurrence. This could mean that either videogame overuse is not as problematic among college students as is it for the regular population, or that the issue is simply not as common as some literature on the topic might suggest.

Casual Gaming

One of the interesting findings of this study was that although few students identified themselves as moderate or heavy gamers, a large majority of students (83.4%) did identify a preferred method of gaming in an optional survey question. Several possibilities might explain this discrepancy.

First and perhaps most likely, is that although most students do not view gaming as a large part of their everyday life, they can at least identify enough with the activity of gaming to indicate a preference for one gaming method over another. This means that for the majority of the sample population, gaming is likely not a significant factor in their own personal development.

It is also possible however, that students did not correctly identify the level at which they play videogames on a daily basis. Some literature on this topic suggests that if gamers perceive their usage as problematic, they may conceal the actual amount of time they play (Young, 2006). This phenomenon would likely occur for gamers who feel that an attached stigma to gaming. The prevalence of this is not known, however if it were fairly common, it could potentially explain why so few students identified themselves outside of the occasional-use category.

Massively Multiplayer Online Games (MMOG)

It was somewhat surprising to see not only so few heavy gamers, but moreover, so few MMOG gamers. When respondents were asked to identify their favorite videogame, only five identified an MMOG. This seems somewhat low considering the tremendous popularity of these games among videogame consumers (Gyimesi, 2007). Once again, this discrepancy with previous studies presents some interesting questions.

First, these numbers call to question the actual popularity of MMOG. If the numbers observed in this study are representative of the entire university population, this would suggest that around 2% - 3% of students play these games. Assuming only a fraction of these students suffer from issues related to overuse, we might assume a much smaller percentage struggles with their game play. By comparison, The American College Health Association (Haines & Haubenreiser, 2007) found that larger percentages of students reported struggling with issues like substance abuse (3.6%) and seasonal affective disorder (6.8%). The same report also suggested that 15% of students felt that "Internet/computer games" (p.6) had detrimentally affected their studies, which either calls to question the prevalence and severity of these games' influence, or the accuracy to which students reported playing them.

One of the inherent drawbacks of this study's methodology was its reliance on self-reported data. As is typical with self-reported data, it is possible that any of the information collected does not accurately reflect reality. This study was not

able to verify whether the information students provided was accurate, but a future study may benefit from a methodology that does not rely so heavily on self-reported data.

Finally, it is also worth noting that the only two respondents who identified themselves as very heavy gamers, also identified the popular MMOG *World of Warcraft* among their most played games.

Implications

Although information and entertainment technologies have become integral elements in the lives of college students, there is still insufficient data exploring their impact on the development of college students. This research helps provide a basic understanding, from which future researchers and practitioners might benefit.

Researchers

Researchers who seek to explore this topic further could easily use the findings of this survey as a guide to help design future projects. While it seemed clear that Internet use was common in this sample, one of the biggest problems encountered in this study was the lack of students who identified their game play at even a moderate level. Therefore, future studies that wish to explore the developmental impact of videogames should consider using a more targeted sampling method.

With regard to Internet use, it seems increasingly clear that a correlation exists between time spent online and a host of interpersonal issues. Future researchers should work to explore whether or not time spent on the Internet can

have different effects depending on the specific activity. Such a study might compare the developmental progress of students who use the Internet primarily for social networking, versus those who use the Internet primarily for research, or other non-interactive purposes such as foraging for news and other information.

Other correlational studies might help bolster understanding of this topic. For instance, future researches should consider investigating the correlation between daily Internet use and variables such as IQ, cognitive development, or grade point average. Similarly, researchers should also consider investigating whether other relational elements such as level of emotional intelligence or involvement in romantic relationships has any effect or correlation on levels of daily Internet or videogame use as well as how these elements could correlate to IDCI scores.

Practitioners

What university staff and faculty may appreciate from this research is a heightened sense of awareness about how information and entertainment technology plays into the developmental progress of students. While responsible researchers should not assume a causal relationship with regard to Internet use and student development, it would be prudent for student affairs professionals to stay open to the possibility that at least in some cases, overuse of information and entertainment technologies may detrimentally affect students in some way or another. This is especially important considering the growing trend to utilize online technologies for academic services.

If a detrimental relationship does in fact exist between Internet use and student development, university faculty and staff members may need to reevaluate the appropriateness of services like online classes and the use of online technology for traditional courses.

Practitioners must also consider how technology is affecting students' experience, as well as the ability for universities to function effectively. This study suggested that for some individuals, the effect of Internet use could be potentially negative in terms interpersonal development. Given this, practitioners may want to gain a better understanding on whether Internet and videogame technology is having an effect on things such as retention rates, academic success, or campus involvement.

Given the concerns this study raises, special attention should also be paid to the appropriateness of online education. If excessive Internet use has a negative bearing on student development, it may not be appropriate for universities to make distance education and online classrooms a primary focus of their offered curriculum. While this study does not necessarily suggest that the use of online education should be eliminated or scaled back, it does suggest that if universities value the overall development of students, they should make face-to-face interaction the principal focus of their educational strategy.

However, the results of this study must also raise questions regarding the appropriateness of online services such as those offered through advising, libraries, and registration services. While the added convenience of these services are

certainly valued for reasons of convenience, practitioners should consider that the cost of these additional online services could potentially be paid in terms of underdeveloped student interpersonal skills.

Existing literature has made reference to overuse and addiction related issues, which suggests that for students, there may be health or wellness related issues in addition to administrative concerns like attrition and academic success. On the other hand, future studies may also reveal that these technologies to be of great benefit to certain facets of university life. While this study cannot make any conclusions to this regard with any certainty, future research and experience may help shed more light on this question.

Limitations

A number of limitations existed in this study. These primarily included limitations related to the sample of study, and method in which the study was conducted.

Research Design

While this study provided a valuable quantitative perspective on this research topic, it did not allow the researcher to gain much in-depth knowledge into the impact of Internet of videogame use on student development. Further, this research only speaks to a very specific facet of Chickering and Reisser's (1993) vector model. The entire theory contains six other vectors, each of which go unaddressed in this study and could offer important information about the impact of Internet and videogame usage.

Another problem inherent in this study's design was its use of data based on self-disclosure. As Young (2006) points out individuals who become dependent or addicted to MMOG might potentially conceal their playing habits. So while the inventory scores were meant to reflect an individual's self-perception, actual time spent online or playing videogames may not have matched the collected survey data.

Survey Design

One of the shortfalls of the instrument used in this study was no adequate question was included that required students to describe their Internet habits in terms of daily activity. This is problematic considering one of the questions left unanswered in this study relates to how interpersonal skills might relate to different patterns of use. The survey did make an attempt to explore this question, however the open-ended nature was likely the key contributing factor in this question frequently being left blank. Future studies on this topic should consider a guided exercise that will more consistently provide responses, so that appropriate statistical conclusions might be possible.

Changing Landscape

One of the difficulties in researching a topic related to technologies such as the Internet and videogames is the pace at which drastic changes can take place to the landscape in which these technologies exist. As previously mentioned, this study recommends that future researchers attempt to better understand how different internet behavior might impact student development. This concept was highlighted

by the recent invention of social networking sites such as Facebook and Myspace, which have only been invented within the last few years.

While all studies of this type are merely a snapshot of the current timeframe, future researchers should take this fast changing landscape into consideration. In the roughly twelve months it took to complete this study, numerous Internet websites, such as Hulu and Twitter have become tremendously popular, while social networking websites like Myspace, have struggled to keep pace with the popularity of Facebook. Furthermore, Google's current plans to integrate Internet and telephone technology for instance may further blur the lines of what is considered Internet, entertainment, or communication technology. While these things should not discourage exploration of topics like these, the combination of this constant, and fast-paced change may potentially making discussion and understanding of this topic even more difficult.

Generalizability

This study used a convenience sampling method, which does not allow the conclusions made in this study to be generalized outside of the sample surveyed. However, Creswell (2008) notes that convenience sampling "can provide useful information for answering questions and hypotheses" (p. 155). While this limitation was understood upfront, the highly diverse nature of the sample in terms of age, gender, year in school, and area of study of this population should also be noted.

Chapter 6

Conclusion

This purpose of this study was to gain a basic understanding of how Internet and Videogame use relate to student development. Using a sample of students from an introductory communication class, the researcher used the Self-Confidence Subscale from Hood and Jackson's (1997) Iowa Developing Competence Inventory (IDCI) as a measure of interpersonal competence as described by Chickering and Reisser (1993). Data was then analyzed to detect whether significant correlations existed between Internet use and videogame use, and total scores on the Self-Confidence Subscale of Hood and Jackson's (1997) IDCI.

The study revealed that a significant negative correlation ($r = -234$) existed between Internet use and scores on the IDCI. Regression analysis also revealed a noticeable difference in the effect of daily Internet use on IDCI scores with respect to gender. Females were shown to exhibit lower scores as daily Internet use increased, where as men showed little to no change as daily Internet use increased. A significant correlation was not observed with respect to videogame use and scores on the IDCI.

The results of this study suggest that university administrators must become more aware of their students' habits and behaviors with regard to Internet and Videogame use. This study discusses the significance of gender with respect

online behavior, thereby highlighting the importance of understanding gender differences with respect to student development.

Finally, while further research is needed on the topic of videogame use, it is increasingly clear based on this study's findings as well as previous research that a connection exists between a student's online habits and their developmental progress.

References

Alexander, L. (2008). World of warcraft hits 10 million subscribers. *Gamasutra*. Retrieved March 12, 2009, from http://www.gamasutra.com/php-bin/news_index.php?story=17062.

Beck, J. C., & Wade, M. (2006). *The kids are alright* (p. 204).

Campbell, A. J., Cumming, S. R., & Hughes, I. (2006). Internet use by the socially fearful: Addiction or therapy? *CyberPsychology & Behavior*, *9*(1), 69-81. doi: 10.1089/cpb.2006.9.69.

Charnigo, L., & Barnett-Ellis, P. (2007). Checking out facebook.com: The impact of a digital trend on academic libraries. *Information Technology & Libraries*, *26*(1), 23-34.

Chickering, A., & Reisser, L. (1993). *Education and identity*. San Fransisco: Jossey-Bass.

Chou, C. (2001). Internet heavy use and addiction among taiwanese college students: An online interview study. *CyberPsychology & Behavior*, *4*(5), 573-585. doi: 10.1089/109493101753235160.

Chu, M., & Nalani Meulemans, Y. (2008). The problems and potential of myspace and facebook usage in academic libraries. *Internet Reference Services Quarterly*, *13*(1), 69-85. doi: 10.1300/J136v13n01-04.

Cole, H., & Griffiths, M. D. (2007). Social interactions in massively multiplayer online role-playing gamers. *CyberPsychology & Behavior*, *10*(4), 575-583. doi: 10.1089/cpb.2007.9988.

Creswell, J. (2008). *Educational research: planning, conducting, and evaluating quantitative and qualitative research* (3rd ed.). Upper Saddle River N.J.: Pearson/Merrill Prentice Hall.

Eberhardt, D.M. (2007). Facing up to facebook. *About Campus*, *12*(4), 18-26. doi: 10.1002/abc.219.

Engelberg, E., & Sjöberg, L. (2004). Internet use, social skills, and adjustment. *CyberPsychology & Behavior*, *7*(1), 41-47. doi: 10.1089/109493104322820101.

Evans, N. J., Forney, D. S., & Guido-DiBrito, F. (1998). *Student Development in College: Theory, Research, and Practice*. The Jossey-Bass higher and adult education series (1st ed., p. 348). San Francisco: Jossey-Bass Publishers.

Facebook (2009). Retrieved March 24, 2009, from http://www.facebook.com/press/info.php?factsheet#/press/info.php?statistics.

Flowers, L. A. (2002). Developing purpose in college: Differences between freshmen and seniors. *College Student Journal*, *36*(3), 478.

Fortson, B. L., Scotti, J. R., Chen, Y., Malone, J., & Del Ben, K. S. (2007). Internet use, abuse, and dependence among students at a southeastern regional university. *Journal of American College Health*, *56*(2), 137-144.

Gilligan, C. (1982). *In a Different Voice: Psychological Theory and Women's Development* (p. 184). Cambridge, Mass: Harvard University Press.

Griffiths, M. D., Davies, M. N., & Chappell, D. (2003). Breaking the stereotype: The case of online gaming. *CyberPsychology & Behavior*, *6*(1), 81-91. doi: 10.1089/109493103321167992.

Gyimesi, K. (2007). *PlayStation 2 Accounted for 42 Percent of Video Game Play in June, Nielsen Reports*. Nielsen Media Research. Retrieved October 8, 2008, from http://www.nielsenmedia.com/nc/portal/site/Public/menuitem.55dc65b4a7d5adff3f65936147a062a0/?allRmCB=on&newSearch=yes&vgnextoid=92202d7fd9ef3110VgnVCM100000ac0a260aRCRD&searchBox=LDS.

Haines, M., & Haubenreiser, J. (2007). *Reference group executive summary*. Baltimore, MD: American College Health Association. Retrieved January 10, 2009.

Hall, A. S., & Parsons, J. (2001). Internet addiction: College student case study using best practices in cognitive behavior therapy. *Journal of Mental Health Counseling*, *23*(4), 312.

Hood, A. (1997). *The iowa student development inventories* (2nd ed.). Iowa City, IA: Hitech Press.

Hood, A., & Jackson, L. (1997). The iowa developing competence inventory. In *The iowa student development inventories* (2nd ed., pp. 5 - 18). Iowa City, IA: Hitech Press.

Jones, S. (2002). The internet goes to college: how students are living in the future with today's technology. Washington D.C.: *Pew Internet and American Life Project.* Retrieved May 22, 2008.

Jones, S. (2003). Let the games begin: Gaming technology and entertainment among college students. *Pew Internet*. Retrieved August 22, 2008, from http://www.pewinternet.org/PPF/r/93/report_display.asp.

Junco, R., & Cole-Avent, G. A. (2008). An introduction to technologies commonly used by college students. *New Directions for Student Services*, (124), 3-17. doi: 10.1002/ss.292.

Lo, S., Wang, C., & Fang, W. (2005). Physical interpersonal relationships and social anxiety among online game players. *CyberPsychology & Behavior*, *8*(1), 15-20. doi: 10.1089/cpb.2005.8.15.

Messerly, J. G. (2004). How computer games affect CS (and other) students' school performance. *Communications of the ACM*, *47*(3), 29-31.

Ng, B. D., & Wiemer-Hastings, P. (2005). Addiction to the internet and online gaming. *CyberPsychology & Behavior*, *8*(2), 110-113.

Ogletree, S. M., & Drake, R. (2007). College students' video game participation and perceptions: Gender differences and implications. *Sex Roles*, *56*(7/8), 537-542. doi: 10.1007/s11199-007-9193-5.

Özcan, N. K., & Buzlu, S. (2007). Internet use and its relation with the psychosocial situation for a sample of university students.

CyberPsychology & Behavior, *10*(6), 767-772. doi: 10.1089/cpb.2007.9953.

Paul Joseph, C. (1995). *Involvement and student outcomes: The student development effects of co-curricular programs*. Doctoral Dissertation, Boston College.

Salaway, G., & Borreson Caruso, J. (2008). *The ECAR study of undergraduate students and information technology, 2008*. Boulder, CO: EDUCAUSE Center for Applied Research.

Simkova, B., & Cincera, J. (2004). Internet addiction disorder and chatting in the czech republic. *CyberPsychology & Behavior*, *7*(5), 536-539. doi: 10.1089/1094931042403118.

Suhail, K., & Bargees, Z. (2006). Effects of excessive internet use on undergraduate students in pakistan. *Cyberpsychology & Behavior*, *9*(3), 297-307. doi: 10.1089/cpb.2006.9.297.

Yee, N. (2006a). The psychology of MMORPGs: Emotional investment, motivations, relationship formation, and problematic usage. In R. Schroeder & A. Axelsson (Eds.), *Avatars at work and play: collaboration and interaction in shared virtual environments* (pp. 187 - 207). London: Springer-Verlag. Retrieved January 12, 2009, from http://www.nickyee.com/daedalus/archives/001539.php.

Yee, N. (2006b). Motivations of Play in Online Games. *Cyberpsychology & Behavior*, *9*, 772-775.

Yee, N. (2006c). An Ethnography of MMORPG Weddings. *The Daedalus Project*. Retrieved October 7, 2008, from http://www.nickyee.com/daedalus/archives/000467.php.

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

Young, K. (2006). Addiction to MMORPGs: symptoms and treatment. Retrieved May 12, 2008, from http://www.netaddiction.com/articles/articles.htm.

Zhang, L. (2008). Cognitive distortions and autonomy among Chinese university students. *Learning and Individual Differences*, *18*(2), 279-284. doi: 10.1016/j.lindif.2008.01.002.

Appendix A

You are encouraged to take part in the following survey regarding student life and video game usage. The information you provide is kept confidential and is used for research purposes only. Your answers will provide valuable insights so please answer honestly. As a reminder, participation while greatly appreciated, is completely voluntary and you are not compelled by any means to complete this survey. If you have any questions, feel free to contact Ben Calhoun at calhoube@onid.orst.edu or in Shepard Hall 201, or Gregg Walker at gwalker@oregonstate.edu or in Shepard Hall B3A.

Demographic Information

1. What is your major? _____

2. Do you live ___ on campus ___off campus?

3. How old are you? _____

4. Do you own a computer? ___Yes ___No

5. Are you? ___Male ___Female

6. What year of school are you?
___First ___Second ___Third ____Fourth ____Fifth ____Sixth ____Other

7. Do you use the Internet every day? Yes_____ No_____

8. What websites (if any) do you visit the most?

_____

9. How many hours do you spend on the Internet on a typical day?
____0-1 Hrs. ___ 1-2 Hrs. ____2-3 Hrs. ____3-4 Hrs. ____4-5 Hrs. ____5 or more

10. How many hours do you spend playing video games on a typical day?
____0-1 Hrs. ___ 1-2 Hrs. ____2-3 Hrs. ____3-4 Hrs. ____4-5 Hrs. ____5 or more

11. What method for playing video games do you use the most?
____Console (e.g. Xbox, Play Station, etc.) ____Computer games
____Gaming websites ____Other

12. Which video game(s) do you play the most? Please list their titles below.

_____

_____

_____

_____

Next you are asked to judge a number of statements in terms of how characteristic the behavior or attitude is of you. Please respond to each statement according to the following scale:

1=Never characteristic of me
2=Seldom characteristic of me
3=Sometimes characteristic of me
4=Often characteristic of me
5=Almost always characteristic of me

13. I am not intimidated by administrative officials.
___1 ___2 ___3 ___4 ___5
14. I find it difficult to ask for help from my teachers or professors.
___1 ___2 ___3 ___4 ___5
15. When I don't understand something I'm not afraid to ask fellow students for clarification.
___1 ___2 ___3 ___4 ___5
16. My communication skills need improvement.
___1 ___2 ___3 ___4 ___5
17. I can readily introduce people at club functions.
___1 ___2 ___3 ___4 ___5
18. I think of ways to get out of giving oral presentations.
___1 ___2 ___3 ___4 ___5
19. I find it difficult to participate in classroom discussions.
___1 ___2 ___3 ___4 ___5
20. I am more self-confident than most of my classmates.
___1 ___2 ___3 ___4 ___5
21. I'm not confidant talking to my peers.
___1 ___2 ___3 ___4 ___5
22. I am firm in speaking with disrespectful people, even those in positions of authority.
___1 ___2 ___3 ___4 ___5
23. Even with friends present, I still lack the confidence to speak in strange surroundings.
___1 ___2 ___3 ___4 ___5
24. If necessary, it's easy for me to confront a teacher or supervisors on important issues.
___1 ___2 ___3 ___4 ___5
25. I handle difficult questions in a smooth manner.
___1 ___2 ___3 ___4 ___5
26. I find it especially difficult to talk with students of the opposite sex.
___1 ___2 ___3 ___4 ___5
27. I can converse easily with people in positions of authority.
___1 ___2 ___3 ___4 ___5
28. I lack the self-confidence necessary to seek leadership positions representing fellow classmates.

___1 ___2 ___3 ___4 ___5

29. I feel comfortable thanking teachers or supervisors who publicly recognize my accomplishments.
___1 ___2 ___3 ___4 ___5

30. I would like to participate in a speech shyness class in order to overcome my own shyness.
___1 ___2 ___3 ___4 ___5

31. I prefer to sit quietly in class than answer a teacher's or professor's complicated questions.
___1 ___2 ___3 ___4 ___5

32. I speak in a clear, even manner.
___1 ___2 ___3 ___4 ___5

33. I basically lack self-confidence even when speaking in a group of friends.
___1 ___2 ___3 ___4 ___5

34. I am not intimidated by disagreements with persons in positions of authority.
___1 ___2 ___3 ___4 ___5

35. I am not a soothing speaker.
___1 ___2 ___3 ___4 ___5

36. I am able to disagree gracefully with my teachers or professors.
___1 ___2 ___3 ___4 ___5

37. I talk effectively with important people.
___1 ___2 ___3 ___4 ___5

38. I would not seek a job where public speaking was important.
___1 ___2 ___3 ___4 ___5

39. I am self-confident that I communicate well with fellow classmates.
___1 ___2 ___3 ___4 ___5

40. I do not have a smooth persuasive speaking style.
___1 ___2 ___3 ___4 ___5

41. I communicate in a comfortable way with new acquaintances.
___1 ___2 ___3 ___4 ___5

42. I can manage to get rid of difficulties through smooth talking
___1 ___2 ___3 ___4 ___5

Appendix B

SURVEY RECRUITMENT SCRIPT

The following script will be read to potential participants immediately before passing out the survey.

"My name is Ben Calhoun and I am a master's student here in the Department of Interdisciplinary Studies. I am currently conducting research on Internet, video games, recreation and college student life.

Please consider taking part in my thesis research by completing this survey. Your participation is completely voluntary. I anticipate completion of the survey will take less than ten minutes. Should you choose not to complete the survey, your decision will have absolutely no bearing on your academic standing in any way.

Thank you for your time and cooperation. I hope that you will choose to be a part of this research as your assistance is essential to its success. I would be happy to answer questions or you may contact me privately if you so choose using the contact information listed on the survey."