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When You Aren't in Kansas Anymore: Computer, Research, and Library Anxieties of Graduate Education Students

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WHEN YOU AREN'T IN KANSAS
ANY MORE:
COMPUTER, RESEARCH, AND LIBRARY
ANXIETIES OF GRADUATE
EDUCATION STUDENTS

By

Rita Ann Kohrman

MASTERS THESIS
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Rita Kohrman

Abstract

Library anxiety is accepted as a valid, unique phenomenon and is recognized as a major stumbling block when writing at the graduate research level. Graduate students are woefully unprepared for the high level of technology found in academic libraries today. Many students are also unprepared for the intricacy of graduate level research. They discover their research skills are inadequate for computerized libraries when they return to universities or colleges for graduate studies after being away from academic studies. They must not only learn research skills, some truly learning for the first time, but also learn an online catalog, databases, Interlibrary Loan/Document Delivery procedures, electronic reserves, and other technical library applications. All of these factors become a source of anxiety.

This thesis will study the interrelation of computer, research and library anxieties to the success of graduate education students. A questionnaire will be developed to measure the correlation between these three factors. A second and third questionnaire based on the pilot questionnaire will be used to refine the questions and to develop a reliable and valid instrument to assess the three anxieties at a later date.

Table of Contents

Chapter One: Thesis Proposal

Problem Statement	1
Importance and Rationale of the Study.....	2
Background.....	2
Statement of Purpose.....	3
Definitions.....	4
Limitations.....	4

Chapter Two: Literature Review

Introduction.....	6
Computer Anxiety.....	9
Research Anxiety.....	13
Library Anxiety.....	19
Summary.....	26

Chapter Three: Thesis Description

Introduction.....	29
Methodology	
Subjects.....	31
Instrument and Procedure.....	31
Results.....	32
Discussion.....	35
Conclusion.....	37
Dissemination.....	38

References

References.....	40
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Appendices

Appendix A-Tables and Graphs of Results.....	55
Appendix B-Human Subject Permission Form.....	68

Chapter One: Thesis Proposal

Problem Statement

Graduate students are woefully unprepared for the high level of technology found in academic libraries today. Students discover their research skills are inadequate for the computerized libraries of today when they return to universities or colleges for graduate studies after being away from academic studies for a while. The intricacy of graduate level research requires searching beyond Internet sources. Students need to learn research skills, some truly learning them for the first time at the same time they must also learn a new online catalog, databases, Interlibrary Loan/Document Delivery procedures, electronic reserves, and other technical library applications. All of these factors become a source of anxiety.

The library anxiety scale most often used to judge library anxiety, the Library Anxiety Scale (Bostick, 1992), is not applicable with the level of technology found in today's academic libraries. While the instrument successfully reveals the many components of library anxiety, a recent study found that the "mechanical barriers" portion of this instrument did not emerge at a higher level than expected and suggested it was only moderately reliable in this area (Onwuegbuzie, 1997d).

Importance and Rationale of the Study

This study reports the results of a project to develop an instrument to measure computer, library research, and library anxieties of graduate education students reflecting the numerous and profound changes in research for academic students. The Computer Library Anxiety Scale (CLAS) could be used by librarians to know which area their students might need the most help when attempting to provide library instruction. By knowing where a student or a class of students has a higher level of anxiety, librarians can structure library sessions and know what format would be most effective for student success. The CLAS may also be used as a pre- and post-test to evaluate the effectiveness of library research instructions.

Background

Jiao and Onwuegbuzie (1999b) revealed that library anxiety is a valid, unique phenomenon. A separate study by Onwuegbuzie showed that library anxiety is one of the major components affecting research proposal writing of education graduate students. A surprise finding was that “mechanical anxiety” did not emerge at a higher level. He suggested that further research was needed since Bostick’s Library Anxiety Scale was only moderately reliable in this area (1997d).

Since 1992 when Bostick’s LAS was first developed, the Internet browser Mosaic has come and gone, replaced by Internet Explorer and Netscape (Berghel, 1999). Older search engines such as Altavista and Yahoo find themselves competing with Google, Teoma and newer competitors (OneStat.com, 2002; Teoma, 2002). Recordable and writeable computer disks are replacing 3.5” square floppies. Databases vendors such as ProQuest and SilverPlatter have moved from information accessed from individual

computer disks to online service. All of these computer technologies have changed the way students use, view, and experience libraries. And these are only the visible changes that students see.

Statement of Purpose

A new library scale is needed to measure the influences and changes brought on by computer technology. Research may now be performed at home, at a school lab, at work, or in the actual library facilities. Knowing this, a new library anxiety scale should take into account the “virtual” nature of research in academic libraries. It should evaluate the level of anxiety students feel when using computer technology to perform library research. It is the hypothesis of the researcher that if there is a high level of computer anxiety, then there will be a correlating high level to research and library anxieties for education graduate students.

The researcher developed a questionnaire that may be used to measure the computer, research, and library anxiety of graduate education students. Twenty-five questions dealt with computer, 25 with research, and 25 with library. Computer questions dealt with student’s general computer experiences. Library research questions focused on using the Internet and databases to find materials. Library portion of the survey, based on Bostick’s Library Anxiety Scale, used general library specific questions such as location of materials, safety and comfort, experiences with the staff, and general library services.

Respondents were asked to comment on any confusing questions on a final sheet to assist in clarification of questions for a second and third revision. After administering the first set of questions, the data responses were analyzed using SPSS 10.

Definitions

Anxiety: fear and/or apprehension which inhibits a person's cognitive skills thereby lowering one's ability to learn, make valid conclusions, or actions

Library Research: the section of a research assignment which requires the use of the library to obtain necessary resources for the completion of the assignment

Library Technology: computer technology developed specifically for library use either by staff or patrons

Literature Review: identification of materials written on a topic

Computer Anxiety: fear and/or apprehension when using or considering using a computer (Leso & Peck, 1992)

Library Research Anxiety: fear and/or apprehension of performing the necessary search for information or sources while attempting a library research assignment.

Library Anxiety: "fear and/or anxiety or phobia of using or even contemplating using, the library" (Mellon, 1986)

Computer-Research-Library Anxiety: fear and/or apprehension of using, or even contemplating using, library technology to complete a research assignment

Limitations

Initial sampling came from a convenient audience of 79 students from a graduate education level testing and measurement class at a mid-west public university. Students

ranged in ages 21 to 55 years of age. None were of a minority race. This factor alone makes generalizability low. The survey was based on the perceptions of anxieties felt by the subjects. Perception rating is by itself subjective in nature.

Chapter Two: Literature Review

Introduction

Technology changes how people interact with others. The use of the abacus in China in about 500 B.C.E. allowed store merchants to quickly add, subtract, multiply or divide. The first quill pen was used about 550 B.C.E. Socrates (469-399 B.C.E.) bemoaned the fact that writing drew his students away from the oral tradition into a new method of learning. The printing press had its opponents in 1440 C.E. The use of a calculator has been blamed for the downward spiral of students' math skills. Storytelling was supplanted by radio; radio by television; television by computers with access to web cam viewing over the Internet. The library's old wooden card catalog is now a computerized online catalog greeting students and patrons as they enter the libraries of today (Blandy & Libutti, 1995; Calvert, 1999; Green, 1991; Hillemans & Bunch, 1991).

The technological changes found in the library have moved from the backrooms of the acquisitions, cataloging, and circulation departments to the front desk of the reference area. General or subject-specific databases replaced many paper indexes, and only a few indexes now survive in some subject areas in academic libraries. The use of the Internet has become a major resource for librarians and students searching for answers (Young & Von Seggern, 2001). The search engine Google is the preferred means to search the Internet (OneStat.com, 2002), even though in 1999 Google was found to cover only 7.8% of the web (Lawrence & Giles, 1999).

The liberating effect of the Internet in providing "free" access to all kinds of information results in a false sense of confidence for students (Frاند, 2000; Grimes & Boening, 2001; Ren, 2000; Saunders, 1999; Schaffner, 2001; Wei, 2002). This

confidence is countered by the fear and resentment of many students of new computers and to research (Blandy & Libutti, 1995).

Even though more students are aware of and use computer technology in their homes, in their work, and in their academic careers, there still are students who lag behind in their confidence and/or desire to use computers. Estimates range from 25% to 58% of higher education students feel or have felt some level of computer anxiety (Ayersman, 1996; Brosnan, 1998; DeLoughry, 1993; Heinszen, Glass, & Knight, 1987; Rosen, Sears, & Weil, 1987). Goldsborough reports that as many as 85% of the public have expressed some level of computer anxiety (Goldsborough, 2002). Brosnan reports that anywhere from ¼ to 1/3 of school age children to older adults in the industrial world hold an irrational fear of computers (Brosnan, 1998).

The fear of computers is especially debilitating for students whether undergraduate, graduate, or doctorate levels – even library science - students (Cleveland, 2001; Dolman, 1996; Egan, 1992; Mellon, 1989; Morner, 1995). Many find they are unprepared for the high level of technology found in academic libraries. Students accustomed to the Dewey Classification System, card catalogs, and paper indexes now must learn the Library of Congress Classification System, an online catalog, resources in different formats, and databases. The major database for education majors, ERIC, can be found not only on microfiche, but also through database vendors as FirstSearch, SilverPlatter, and E-Subscribe and free through the Internet. Database vendors such as ProQuest and SilverPlatter have moved from information accessed from individual computer disks to online services.

Computer Anxiety

In their book, *Computerphobia: How to Slay the Dragon of Computer Fear*, Weinberg and Fuerust estimate as many as 5% of people are severely computerphobic. The severe computerphobic experiences physiological reactions such as nausea, sweaty palms, dizziness, and high blood pressure (Weinberg & Fuerust, 1984).

What of the remaining 95% of the people who interact with computers? Can we assume that the remaining 95% also have some level of computer anxiety? Rosen and Weil (1990) identify three levels of computer anxious people. The uncomfortable user is one who is computer functional but retains some level of anxiety when dealing outside his comfort area. The cognitive computerphobic person appears functional but inwardly uses negative self-talk when dealing with computers, thereby falling into a self-fulfilling prophecy profile. His private thoughts reveal his inward fears -- computers are difficult, everyone else knows what to do, he might break the machine, etc. The anxious computerphobic, similar to Weinberg and Fuerust's 5%, may display physiological systems of anxiety -- e.g., sweaty palms, headaches, high blood pressure, heart palpitations, nausea, and chills -- when interacting with computers (Rosen & Weil, 1990). Crawford and Gorman (1984) and Saunders (1999) refer to physical reactions to computer use similar to those expressed by anxious computerphobic people when exposed to monitors for a long period of time.

Various phrases have been used in place of computer anxiety: computer stress; computerphobia; technostress; technophobia. Perceptions of computer technology and how they affect our society and culture has changed greatly since the early 1980s when computer anxiety was initially defined and studied. The definition of computer anxiety

Graduate students discover their research skills are inadequate for the computerized libraries of today when they come to universities or colleges for advanced studies after being away from academic studies for a while. Added to this pressure is the expectation held by many professors that graduate students already know or should know how to do research (Dreifuss, 1981; Morner, 1995). The intricacy of graduate-level research requires searching beyond the Internet for sources, and students find the need to learn research skills, some truly for the first time. Dreifuss (1981) reported that only 14% of graduate students felt they were familiar with research methods. When graduate students are faced with the research paper, they have to learn new avenues to obtain information. There are the online catalog, databases, web tutorials, Interlibrary Loan/Document Delivery procedures, electronic reserves, and other technical library applications.

Egan (1992), while referring to different and complex paper indexes not usually found in school or public libraries, aptly stated, “[library] tools give research a hostile face” (p. 67.) It can therefore be stated that library technology has given research a “hostile face” for many students. The library they knew is no longer the same. There is so much to learn. All these computer technologies have changed the way students use, view, and experience libraries. All these factors become sources of anxiety. It is as if students have been lifted by a tornado and transported to a new place. They are facing a new culture and new rules to learn just when they need stability and familiarity (Blandy & Libutti, 1995; Crowe & McKee, 1995; Ostrow, 1998; Presno, 1998; Worthington & Zhao, 1999). They are not in Kansas any more.

has changed through the years, illustrating researchers' progression in understanding what computer anxiety is and what it entails.

A comparative study of computer instruments revealed that early computer anxiety scales often used the terms "computer anxiety" and "computer attitudes" interchangeably. These two traits should be treated separately (Kernan & Howard, 1990). While there are many reliable computer anxiety scales, none deal with level of computer technology needed for research in academic libraries.

Jay's definition of computer anxiety (cited in Brosnan, 1998b) is the most commonly cited. Jay defined computer anxiety in 1981 as a) a resistance to talking about computers or even thinking about computers; b) fear of or anxiety about computers; c) hostile or aggressive thoughts about computers. These three components touch on behavior (a), emotion (b), and attitude (c) (Brosnan, 1998b, p. 12). A review of the literature shows a progression from recognition of the difference between attitudes toward and anxiety about computers (Kernan & Howard, 1990), leading to the "multifaceted, complex phenomenon" (Worthington & Zhao, 1999, p. 306) computer anxiety is considered today.

What is lacking is a definition that recognizes the fluidity of computer advances and computer use. According to Torkzadeh and Angulo (cited in Jerabek, Meyer, & Kordinak, 2001), the computer anxious person usually displays three characteristics: a) psychological (fear of damaging computers); b) sociological (social/cultural context); c) operational (p. 278). Other definitions combine the behavioral and psychological aspects (Cambre & Cook, 1987; Chua, Chen, & Wong, 1999; Hudiburg, 1989; Liu & Johnson, 1998; Presno, 1998; Rosen & Weil, 1990). Chua, Chen, and Wong state that computer

anxiety is too complex to “be fully described from a single perspective” (p. 611). A usable computer anxiety definition and instrument need to acknowledge the “changing nature of computer technology... [and] that computer anxiety is an adaptive response to the uncertainties of technological progress in society” (Worthington & Zhao, 1999, p. 310-311).

Because of the broad nature of the computer anxiety definition, computer anxiety is defined in this paper using the definition of Simonson, Matt, and Maurer (cited in Leso and Peck (1992)). They define computer anxiety as being a fear and/or apprehension when using or considering using a computer (Leso & Peck, 1992). This definition takes into account the fear or apprehension individuals may display depending on various factors. Factors include who first might have first introduced the person to the computer technology, such as a mother (Quinn, 2000) or a teacher (Brosnan, 1998; Rosen & Weil, 1995); past failure or successes with hardware or software (Moore, 2002; Turner, Kaske, & Baker, 1990); and current task being attempted (e.g., a research paper) when simultaneously learning a new computer application (e.g., a new database).

Using Simonson, Matt, and Maurer’s definition, the researcher recognizes three similar but different characteristics of a computer anxious person. The three characteristics are in behavior, emotion, and perception. The display of behavioral anxiety can be seen through students’ resistance to learning new technology that would assist in a research project or paper (Flitsos, 1992). Avoidance is demonstrated even when a student might be somewhat familiar with technology but delays completing an assignment until the last moment. Some students become so preoccupied with the new

technology that they show excessive caution when trying to manipulate the equipment or software.

Behavior may also be manifested through the expression of feelings or emotions. Students' fears are usually irrational or out of proportion to the actual computer use. Students expressed the fear of breaking the machine by pushing a wrong key (Russell, 1996; Wang, 2000). Fears of losing the data or embarrassment that they are the only ones not familiar with computers have been expressed to various researchers (Mellon, 1986; Presno, 1996). Hudiburg & Necessary (1996) reported that students expressed frustration over past computer hassles or negative expectations with computers. Students become resentful or frustrated when databases change or their research skills no longer are applicable (Blandy & Libutti, 1995).

Some students, when attempting shortcuts, become frustrated when the computer does not perform a function or as quickly as they think it should (Maurer & Simonson, 1984; Turner, Kaske, & Baker, 1990; Valentine, 2001). Lester refers to this as the "McDonald's effect" (quoted in Jerabek et al, p.279). Fast food is often not fast at all. After waiting to place your order, you have to wait to receive your desired outcome – the food. Retrieval can be slow not only at a fast-food restaurant, but also when doing research. The frustration feeds into impatience with technology – hence "rage against the machine" - technology rage (Moore, 2002; Scott, Trimble, & Fallon, 1995). Web rage, or frustration with searching the Internet, starts if results are not received within three minutes and reaches its peak within twelve minutes (Charny, 2000).

Feelings of helplessness were expressed to Tenopir when she relayed her experience of teaching students how to use databases to research a topic. Students would ask for reassurance before and after a key was pressed (Nahl, 1993; Tenopir, 1994).

The behaviors and the expression of feelings are outward displays of a student's perception of self-efficacy with computers. Students who are feeling incompetent lack the confidence that the machine is a tool that can help and make the research process easier (Presno, 1996; Russell, 1996). They are troubled by negative self-talk and fear that others know more than they do. Many students perceive that databases are too complex or hard to learn. This becomes a major issue when having to learn a new database while attempting to do research at the same time (Blandy & Libutti, 1995; Brosnan, 1998; Chou, 2001; Quinn, 2000; Russell, 1996; Zhang & Espinoza, 1998).

Computer technology has changed research methods and libraries forever. Those new to graduate-level research and to the research technology can face their fears and embrace the possibilities offered by libraries. Evelyn L. Curry (2001) states that "emerging technologies offer more alternatives to the contemporary library users, and these alternatives are opportunities in disguise" (p. 167).

Research Anxiety

When talking about research anxiety, it is necessary to know how the term is defined. Research may be understood in the broad sense as the complex, structured process a person uses when studying a question or problem, resulting in a clarification and/or resolution of the problem (Good, 1973). Many academics, students, and librarians are talking at cross-purposes when using the term "research." Faculty are referring to a general research process of which library research is but one of the components. Students

often define it as reporting, what Gordon refers to as “pseudoresearch” (Gordon, 2002). Librarians often refer to research as the process of finding sources of information that “frames the research, placing it in the context of a related body of knowledge” (Gordon, 2002, p. 19). Stoa (cited in Rogers, 1987) states that “research skills center on the quest for knowledge; library skills center on the search for information” (p. 125). Research is a process that consists of a hypothesis or thesis, a review of materials pertinent to the topic, and a discussion/conclusion of the results of the study. The identification of previous materials on the subject is referred to as a literature review. The literature review is where the library becomes the part of the broader research process.

Higher education students, especially graduate students, need the literature review to reflect a high level of expertise and professionalism. Higher quality, peer-reviewed research oriented toward empirical studies is demanded for undergraduate capstone classes and graduate level studies. Students are asked to find past studies on their topic, many containing statistical language or jargon and detailed method analysis with which they may be unfamiliar (Onwuegbuzie, 1997d; 1998, 2000; Parker-Gibson, 2001). The resulting increase in materials means an increase in time to read, to analyze, and to synthesize the sources into the research product. The importance of the literature review lies in the fact that it can determine the success of the final product (Hart, 1998). The anxiety of performing a literature review is compounded by the lack of familiarity many students have with the technology involved in the library research process.

There have been numerous studies of research anxiety since 1972 with 18 focusing on research or library anxiety experienced by pre- or in-service teachers (Alire as cited in Murry, J.W., McKee, E.C., and Hammons, J.O., 1997.; Compton as cited in

Murry et al., 1997; Jiao & Onwuegbuzie, 1997, 1999; Jiao, Onwuegbuzie & Daley, 1997; Libutti as cited in Murry et al. 1997; Morner, 1995 Napier, 1978/79; Onwuegbuzie, 1997b, 1997c, 1998; 2000; Onwuegbuzie & Daley, 1997; Onwuegbuzie & Jiao, 1998; Russell, 1996; Schaller & Parker, 1997; Short & Szabo, 1974; Wilson, 1998). Those who have specifically studied the library skill portion of the research process did not provide a definition of library research anxiety. Rather, they have included library research skills as part of a general library anxiety definition (Bostick, 1992; Mellon, 1986; Onwuegbuzie, 1997). Because of the very changing nature of seeking sources for a research assignment, this researcher feels a distinct definition of library research anxiety is warranted. For this study library research anxiety is defined as the fear and/or anxiety of performing the necessary search for information or sources while attempting a library research assignment.

Library research anxiety is manifested through behaviors and expression of feelings that reflect the researcher's perception of his ability to perform a literature review. Behaviors such as procrastination have been reported by librarians, professors, and students themselves to researchers (Onwuegbuzie & Jiao, 2000; Valentine, 2001). Physical discomforts of using the monitor have been noted as a reason people procrastinate starting or finishing research assignments (Crawford & Gorman, 1995; Saunders, 1999). The lack of support by faculty, who assume that students know how or have the time to perform a literature review, has been cited as one reason students procrastinate (Benson, 1995; Jacobson, 1991). There is also the self-imposed desire or need for perfection. Fear of failure, task aversion, high standards, and expectations of perfection cause many graduate students to delay attempting or performing the literature

review or even enrolling in the research or thesis classes (Jiao & Onwuegbuzie, 1998; Onwuegbuzie & Jiao, 2000).

Distractions play a major role in procrastination. Family, work, and social obligations easily distract a student's interests and desire to do the research necessary to complete an assignment. Oberman (1991) reported on another distraction: the "cereal syndrome." Finding resources is similar to going down the cereal aisle. Too many choices or sources cause confusion and frustration, blocking the student's ability to make critical choices.

The researcher has observed another tendency of students attempting the literature review portion of their research assignments. Here the tendency is to want everything. The student acts similar to the dog with the bone in Aesop's fable. The fear of not finding or getting everything necessary, drives some students to act like the greedy dog with a bone seeing his reflection in the river. He jumps into the river to get the other bone, only to lose the one he has. Upon seeing another citation (or web page), the student pursues the new lead only to find that too much information can be just as debilitating as not enough. With too much information, there is only more to process, more to read, more to analyze, more to synthesize (Oberman, 1991). Turner, Kaske, and Baker (1990) reported the increase in baud rate technology increased the processing demand of students. Students with high anxiety displayed low comprehension with the retrieval of a corresponding increase in materials. The tasks of searching, reading, analyzing, and writing are complex skills and each is "altered by the other" (Lenski & Johns, 1997, p. 16).

Students have reported feelings of inadequacy, confusion, frustration, and impatience to researchers when attempting library research. Students felt emotionally vulnerable (Brookfield, 1995) over their lack of skill to perform the necessary literature review process (Crowe & McKee, 1995; Grimes & Boening, 2001; Onwuegbuzie, 1997; Parker-Gibson, 2001). They felt confused because of the multiple skills and tasks they needed to learn and tasks they needed to do when seeking and retrieving information. The need to multi-task under pressure has proven to decrease students' critical thinking and self-esteem and to lower the likelihood of success (Parker-Gibson, 2001; Russell, 1996; Schaller & Parker, 1997; Turner et al., 1990). Brookfield (1995) states that students feel "public embarrassment and private humiliation" when they feel they fail to learn as quickly or as easily as desired (p. 52). Frustration and anger increase when necessary sources may not be readily available (referred to by Onwuegbuzie as "resource anxiety" (1997d, p.18)), when what is retrieved is not wanted (Wiberley & Jones, 2000), or when different technology is required to retrieve the desired source (i.e., microfiche or microfilm which are notorious for their difficult usability and readability) (Valentine, 2001; Wiberley & Jones, 2000).

The hidden cost of research sometimes prohibits students from obtaining articles and books when they must pay for copying and interlibrary loan fees. Students also fear the needed articles will not arrive by a certain date. The issue of time was one constant mentioned over and over again in the research (Benson, 1995; Croft, 2001; Dolman, 1996; Valentine, 2001; Wiberley & Jones, 2000; Young & Van Seggern, 2001).

It is easier to settle for full-text articles that have been found, even if they are not the best (MacDonald & Dunkelberger, 2000). Frustration and confusion feed into

impatience because of the time needed to learn a computer program in order to retrieve and locate sources (Stamatopolos, 2000; Wiberley & Jones, 2000). Time is, as noted above, the most important and valuable constant students do not want to waste.

As with computer anxiety, library research anxiety is reflected in the students' self-perception as they deal with uncertainty and feelings of inadequacy when seeking information sources. Computer technology has made obsolete the research skills many graduate students learned as an undergraduate, if they learned them at all (Gordon, 2002). Undergraduate students arrive at the library with little or no knowledge of how to do research using computers, other than perhaps using search engines on the Internet. The feeling of incompetence is compounded by the students' perceptions that others know how, or at least have the basic skills, to do library research. Mellon (1986) reported on this tendency in her seminal study on library anxiety.

Students' feelings of incompetence are being reinforced by those they look to for guidance and reassurance. Many faculty expect the undergraduate and graduate students to know the concepts required for graduate-level research (Dreifuss, 1981; Gordon, 2002; Mellon, 1988; Murry et. al., 1977; Shen & Gresham, 2000) and believe others are responsible for teaching students the library research process (Burton & Chadwick, 2000). Faculty and other experienced researchers often fail to remember that they at one time were novice researchers. Their positions and experiences have allowed them to develop the cognitive skills and expertise to do research, including library research (Brookfield, 1995; Laskowski, 2002; Lenski & Johns, 1997; Parker-Gibson, 2001; Turner et. al., 1990).

The research of Short and Szabo (1974) found that only 4% of graduate students had an understanding of what graduate research entailed. Morner (1995) reported that 14% of graduate students felt they knew basic library resources and services. Gordon's 2001 study of 86 graduate students found that 64% believed they were prepared to do research, even though the survey questionnaire revealed that they did not have the necessary skills for graduate research. Forty-two percent used the Web for the majority of their research work (Gordon, 2002). Quinn (2000) reported that most students were not even familiar with how to read a bibliographic record or a citation. This unfamiliarity with basic library research skills leaves the majority of graduate students doubting their abilities. The low perception of their research abilities is reflected in the high attrition rates of graduate students, especially African-American graduate education students (Onwuegbuzie, 1998). Other vulnerable students are international students (Jiao & Onwuegbuzie, 1995; 1999c) and rural students with little exposure to technology (Onwuegbuzie, 1997).

As with computer anxiety studies, library research anxiety studies report similar indicators of behavior, feelings, and perception. The extensive changes in research methods have therefore changed the way people view the library. Students are displaying a different form of library anxiety from what past research has shown.

Library Anxiety

Mellon (1986) defined library anxiety as fear and/or anxiety or phobia of using, or even contemplating using, the library. Her study involved undergraduate, community college, and graduate-level students who described their initial response to the library as feeling dread, scared, overpowered, lost, helpless, confused, and in a nightmare (p. 162).

Other studies on library anxiety revealed similar responses (Bostick, 1992; Dolman, 1996; Jiao & Onwuegbuzie, 1995, 1997, 1997b, 1998, 1999, 1999b, 1999c; Mech & Brooks, 1995; Mohundro, 1999; Morner, 1995; Napier, 1978/79; Onwuegbuzie, 1997, 1997b, 1997d, 1998; Onwuegbuzie & Daley, 1997; Onwuegbuzie & Jiao, 1998, 1998b; 2000; Schaller & Parker, 1997; Szymanski, Swett, Watson, Lin & Chan, 1998; Tenopir, 1994; Westbrook & DeDecker, 1993; Wilson, 1998; Zahner, 1993).

Mellon's study found 75% to 85% of the 6,000 students expressed fear of the library (Mellon, 1986). She followed up her study with a 1988 report clearly stating that students fear or perceive others to be competent in library use with only themselves as the incompetent ones, that their incompetence was an embarrassment, and that asking for help would reveal their inadequacies (Mellon, 1988).

Bostick (1992) found in her study of graduate, undergraduate, and community college students that those over the age of 50 were more likely to experience library anxiety. She speculated that previous "library experiences and/or their familiarity with modern library techniques" and returning to the academic environment might possibly be sources of their anxiety (p. 83). It should be noted that Bostick's sample had only four students over the age of 50.

Bostick listed five dimensions of library anxiety in her dissertation describing the development and validation of her Library Anxiety Scale. The first dimension, barriers with the staff, describes how students perceived the librarians and library staff as intimidating, unapproachable, and too busy to provide assistance. The second dimension, affective barriers, deals with students' feelings of inadequacy when using the library and their level of library research skills. They feel that they alone do not know how to find

materials in the library. Comfort with the library, the third dimension, deals with safety issues and being comfortable working in the library. Knowledge of the library, the fourth dimension, refers to level of familiarity with the layout of the building itself, library procedures, and where materials were located. The final dimension, mechanical barriers, deals with library technology such as copiers, computers, computer printers, and change machines. Bostick (1992) and Onwuegbuzie (1997d) found this to be the case more with graduate students than with students at other educational levels. A study of international students by Jiao and Onwuegbuzie (1999c) found that for these students the highest source of library anxiety was library technology, the mechanical barrier dimension of Bostick's Library Anxiety Scale.

Jiao and Onwuegbuzie, who have extensively researched library anxiety, have significant research to support the conclusion that library anxiety is a real phenomenon affecting academic success and perceived social acceptance (Jiao & Onwuegbuzie, 1999b). They used Bostick's Library Anxiety Scale throughout their studies. Their three studies of the relationship between library anxiety and learning styles revealed numerous characteristics of library anxious graduate students. The Onwuegbuzie and Jiao (1998) initial study of library anxiety and learning styles of graduate students revealed that anxious students preferred structure and lacked persistence. Students who liked to work on their own (self-motivated) were shown to have a high level of library anxiety because they were fearful to reveal to others that they needed help while in the library. Students tended to be peer-oriented, preferring a cooperative style of learning. Mobility preference was another characteristic of a library anxious student. Onwuegbuzie and Jiao theorized this might be because the need to move about is opposed to the need to sit in one place

while conducting library research. They may lose their access to the computer or to the database to another student if they leave for one reason or another. The time of day when a student preferred to research also was a factor. Students displaying more library anxiety because of other factors (work or children) had to research the afternoon. Onwuegbuzie and Jiao encouraged further research to investigate if “levels of library anxiety [reached] their peak in the afternoon” (p. 244). Visual learners also tended to have higher levels of library anxiety. The researchers did not offer any possible reason but encouraged further study.

Their follow-up study on understanding the library anxious graduate student furthered the insights of the relationship between library anxiety and learning styles. Mobility was the number one factor most associated with these students with the library antecedents of barriers with the staff, affective barriers, knowledge of the library, and mechanical barriers. If a student preferred mobility, he realized that there was the chance of losing access to library resources. The lack of persistence predicated library anxiety because students were afraid of or perceived the staff as barriers, were intimidated about their poor knowledge of the library, and found library technology frustrating. Visual mode of learning was again a surprisingly high factor in library anxiety. The researchers encouraged further study to “unravel this relationship” (Onwuegbuzie & Jiao, 1998b).

Their final 1999 study further analyzed how library anxiety and learning styles were related. Those students who displayed a high need for mobility and were not tactile learners showed a higher level of library anxiety. Most students believed that morning was their best time for work but because of various reasons were forced to come to the library in the afternoons or evenings. They preferred structure and found the open-ended

nature of library research upsetting. They found working with library technology and locating materials difficult or troublesome. Noise was a factor for both those who preferred quiet and those who preferred to study in groups. The conflict between these two groups resulted in higher library anxiety because some students came to the library to study in quiet areas and some came to study with a group and needed to converse (Jiao & Onwuegbuzie, 1999).

As with computer and library research anxieties, students experienced a variety of feelings that added to the stress of visiting an academic library. One major feeling was confusion. There was a new language to learn (e.g., magazines, periodicals, journals) (Collins, Mellon, & Young, 1987; Keefer, 1993; Kupersmith, 1987). Locating books was confusing. Fiction books were not found in one section as in public or public school libraries, nor do most academic libraries use the Dewey Decimal Classification System. Because of the huge numbers of books, periodicals, and other sources of information (i.e., government documents, maps, music collection, etc.), more than one floor or library was often needed to hold the collections. Kupersmith (1987) wrote on the importance of signage or other directional aids upon first entering a library. He reported that students became disoriented because of the lack of or confusion about floor plans and other library graphics and signage.

Stress upon the mental and creative processes can hamper not only finding but also accessing information located in the library. Even with clear and easily observable signs, mental and cognitive stress can cause students to often overlook helpful directional signs, misread call numbers, or become overwhelmed by too many details. Keefer (1993) referred to this as the "hungry rat syndrome." A hungry rat often misses the correct and

previously known turns because the drive and need for the food (information) at the end of the maze (library research process) causes it to become confused, anxious, or rattled. Students who come to the library in a state of stress or anxiety, or develop anxiety while attempting the library search process, find their cognitive abilities “degraded or limited.” The student overlooks the obvious, displays rigid and inflexible thinking, and shows other anxious behavior (p. 337).

Feelings of inadequacy haunt many of these students for the same reasons of those with computer and research anxieties. They perceive themselves as the only ones who knows nothing about libraries or the library research process. They become impatient with themselves or others. These feelings feed into the perception of incompetence that should be hidden. Many fear going to the library and asking for help will reveal their inadequacy. They put off starting their research and spending time in the library.

Onwuegbuzie and Jiao’s 2000 study on graduate procrastination revealed many interesting figures and insights. Solomon and Rothblum (cited in Onwuegbuzie & Jiao, 2000) who revealed 27 % to 46% of undergraduate students confessed to procrastination when writing a term paper, studying for examinations, or reading weekly assignments. Some procrastinate because of a fear of failure, but most because of task aversion. The researchers also cited a study performed by Onwuegbuzie regarding procrastination and statistical anxiety showing that graduate students admitted to procrastinating on writing papers (41.7%), studying for examinations (39.3%), and reading weekly assignments (60.0%). When comparing the graduate students to undergraduate students in Onwuegbuzie’s study, it was reported that graduate students were 3.5 times more likely

to procrastinate with weekly readings and nearly 2.5 times more likely to procrastinate studying for examinations. Onwuegbuzie's study also revealed that graduate students procrastinate during the literature review process (p. 46).

Onwuegbuzie and Jiao's study confirmed Solomon and Rothblum's work. Onwuegbuzie and Jiao cited Solomon and Rothblum finding that 87.0% of graduate students procrastinated because of the fear of failure and 45.6 % because of task aversion. There was a significant overall relationship between students' procrastination and their perception of barriers with the staff, comfort with the library, and mechanical barriers (Onwuegbuzie & Jiao, 2000). Onwuegbuzie's 1997 study of graduate students when writing a research proposal confirmed task aversion and fear of failure as reasons for academic procrastination. Here library anxiety showed a significant relationship to barriers with the staff, affective barriers, comfort with the library, and knowledge of the library (Onwuegbuzie, 1997d).

Onwuegbuzie and Jiao's procrastination study also revealed that procrastination and library anxiety were not related to time management or study skill deficits. Anxiety affected the students' cognitive-affective abilities. The researchers suggested that the bidirectional relationship of procrastination and library anxiety is a causal relationship because of the unique and "intricately intertwined" nature of each component (Onwuegbuzie & Jiao, 2000, p. 51).

In 1998 Jiao and Onwuegbuzie reported on another study of graduate students and how perfectionism and library anxiety were related. Those graduate students holding a socially prescribed need for perfection had a higher level of library anxiety than the self-oriented or other-oriented perfectionists. The self-oriented perfectionists set high

standards for themselves and severe self-evaluations to attempt perfectionism. The other-oriented perfectionists hold others to extreme standards and set high standards for evaluations. The socially prescribed perfectionists feel that others of significance will judge them and fear negative social evaluations. They do not wish to reveal their ignorance to even the librarian who would be most qualified to assist them while at the library. This fear is also reinforced by the assumption of faculty that graduate students are familiar with the library and the library research process.

With the faulty assumption that they should know everything about the library, including library technology and the research process, socially prescribed perfectionists set themselves up for failure or lower academic achievement. Jiao and Onwuegbuzie encourage further research to investigate the relationship among perfectionism, library anxiety, and completion rates of graduate degrees (Jiao & Onwuegbuzie, 1998).

Summary

The staff-barriers dimension of library anxiety has changed with the latest in library technology. Students need rarely to interact with the library staff when they can access databases and electronic books outside the library premises. Questions can be asked through telephone, voice mail, email, or in some cases with a 24/7 format (Dougherty, 2002; Patrick & Matthews, 2002). Students can find books, check them out, and have them delivered to their homes or in some cases to the nearest library. Renewal of items can occur over the Internet by direct access into the students' records by the students. The need to come to the library and interact with the staff has diminished.

The affective dimension of library anxiety, or the students' confidence and/or ability to conduct research, no longer is confined to the library premises. They believe

they can do their research without exposing themselves to the possibility of humiliation by asking for help. But research shows that students frequently cannot distinguish between quality scholarly sources and other sources. They spend hours in inappropriate databases or ineffective searching. They have heard they can access full-text articles and write their papers without ever coming into the library. With this easy access, they at times settle for the most convenient article – not necessarily the best.

The comfort dimension of library anxiety has also changed because technology has altered the need to visit the library. Finding any material from the comfort of home or work computers outweighs the inconvenience of coming to the library to find the right source. Students can do the laundry while searching from home. Students can get up and have dessert or food and not fear losing the computer to another person. Many find the convenience of distance education more suitable to their needs, and library location is a low priority.

Technology has changed the pressing need to know the layout of the library. Document delivery, electronic course reserve, and electronic interlibrary loans can be initiated without coming to the library. Lower exposure to the actual library facility lowers the knowledge and familiarity of where things are located in the library. When students must come to the library, they find themselves confused by the vastness of the collection, by the location and use of library equipment and other facilities such as vending machines and restrooms. To locate needed items or facilities requires knowledge of the library.

These four dimensions of library anxiety (i.e., barriers with staff, affective barriers, comfort barriers, knowledge barriers) have been ameliorated and altered by

library technology. The problem is that students believe they can work around the fifth dimension of mechanical barriers found in the library by getting what they want over the Internet or by finding suitable enough articles by unskillfully searching databases. It is easier not to expose oneself to the frustration of library research at the library and not to ask for help. It may not be convenient to drive the distance to the library. Students can call or email for help from the librarian without identifying themselves. Many students do not see the reason to even come to the library. Why struggle with the microfiche and microfilm machines? Why compete for computers and printers in a lab or library when a computer is at home or at work? Why take the time to come to the library?

With inadequate or shallow computer and library research skills, students are producing lower quality research assignments than before. Students' lack of persistence in finding the quality research sources AND learning effective search skills are hampering the successful completion of quality graduate research. Brosnan (1998) sees the lack of persistence as a symptom of low confidence or low self-efficacy when dealing with technology and therefore a symptom of higher computer anxiety (p. 71). It is easier not to persist (Brosnan, 1998b; Quinn, 2000) and just get by with what is found and easy to access. The mechanical barriers of library anxiety therefore remain the key component to understanding and improving students' library research skills. Those mechanical barriers now dominate the technology driven academic library.

Chapter Three: Thesis Report

Introduction

Coming to the library for research is an anxious experience for many students. Many students neither feel the need nor desire to come to the library to complete a research assignment because of the possibility of finding articles and other sources from their home computers. Graduate students, especially, face an increase level of anxiety because faculty and many students themselves believe that at the graduate-level students should know how to research a topic. Studies have shown that this is not the case (Blandy & Libutti, 1995; Mellon, 1986). Most graduate students come back to the academic arena with different experiences, needs, and expectations than as undergraduates. The non-traditional undergraduates students enter into higher education experience are also arriving on campus with different experiences, needs, and expectations from the traditional students (Carr, 1999; Collins et. al., 1987; Driefuss, 1981).

The most commonly used instrument to measure library anxiety scale is no longer valid for the libraries in the 21st century. The Bostick Library Anxiety Scale, developed in 1992, lists five dimensions of library anxiety, but technology has changed how students use libraries since then. It no longer can gauge the level of library anxiety most students now feel with the continuing changes technology brings to library and library research.

The exploratory study focused on the relationship among computer anxiety, library research and library anxiety for students using academic libraries. Are these three factors related and how do they affect each other? If students have a high level of computer anxiety, would it not be reasonable to expect it to affect their library research skills? If students have a high level of anxiety regarding their library research skills,

would it not affect their ability to use the library computer technologies that are present in academic libraries? If students are anxious to come to the library for help or to retrieve necessary items not available electronically, does this not affect their library research skills?

The development of an instrument that compares the three anxieties of students in academic libraries will enable librarians to take into consideration and plan for the experiences, needs, and expectations of the students with whom they come into contact.

The researcher will design an instrument that will measure anxieties of the computer technology and the level of library research anxieties of students using the academic libraries. Anxiety has been shown to limit the mental and cognitive abilities of students when faced with stressful situations or experiences. More effective library instructions will be developed when librarians are able to identify and understand the level of anxieties of their students. Knowing which area students are more anxious will allow for the saving of the most important and valued item students, faculty, and librarian hold precious – time.

The researcher will describe the methodology used to develop the instrument. A description of the subjects or participants in the initial study will include the reason for the limited selection. An examination of the results of the instruments will be given along with a discussion of findings and insights gained through this experience. Plans for dissemination will be addressed in the final section of this chapter.

Methodology

Subjects

While enrolled in the Masters of Education/Adult Learning and Higher Education, the researcher administered the survey to 79 graduate education students at a mid-west public university from three sections of an education testing and measurement class. The sample population included 18 males and 61 females, of which 92% were teachers and 8% held other positions in the teaching field. One class (25 students) was on located at the downtown campus in a large urban area; one was at a satellite campus (18 students) 35 miles away in a smaller city; the final class (36 students) was at another location three hours away. All classes received instruction from the same professor at the same time. Two classes received instruction through distance education technology. Library instruction was provided by this researcher during one of the sessions. The off-campus librarians offer extensive library instructions to all distance education students at various times.

Human Research Review Committee reviewed the survey questions. Students were given the option to participate but none declined. No effort was made to identify any of the students.

Instrument and Procedure

The researcher studied past computer, research, and library instruments (Bostick, 1992; Heinssen et. al., 1987; Jacobson, 1991; King & Ory, 1981; Landrum & Muench, 1994; Loyd & Gressard, 1984; Marcoulides, 1989; McInerney, Marsh, & McInerney, 1999; Popovich, Hyde, Zakrajsek, & Blumer, 1987; Szymanski et.al., 1998). Other librarians, a psychology professor, a psychologist in the counseling center, and education

professors were also interviewed about what they have seen or experienced when dealing with students who displayed various levels of computer, library research, and/or library anxieties. Undergraduate and graduate students were also interviewed to obtain what they saw or what made them anxious when dealing with computers, library research, and/or the library. Some topics included the fear of breaking computers, computer access, hardware/software capabilities, lack of time, limitation of library/staff knowledge, computer difficulties, lost work, retrieval difficulties, printer difficulties, speed of computers, monitor problems, lack of space, instructional difficulties and gender issues.

The researcher then developed 75 questions for a 4-point Likert survey based on the research. The survey was divided into 3 sections of 25 questions each: Computer Anxiety, Internet/Database Anxiety (Research), and Library Anxiety. The psychologist and the faculty advisor assisted in the wording of the questions. The demographic questionnaire was divided into 3 sections of 22 questions: General Demographics, Library Demographics, and Computer Demographics.

Each class was given the survey at separate times when either the researcher or professor could administer it. The survey was administered within a three-week time frame. Each week a class would be given the survey. A last minute change in question 75 resulted in that question not being asked of the satellite campus; therefore question 75 was dropped from the analysis of the data.

Results

Data was analyzed using the SPSS version 10.0 statistical application. When reviewing the results initially, the researcher saw that the Likert responses were listed in such a manner that the agreement answers (Strongly Agree and Agree) were nearest the

zero of the X-Y axis. The disagreement answers (Strongly Disagree and Disagree) radiated outward. The presentation of the results would have been confusing to readers since most would relate the “zero” answers as disagreement. After discussion with the statistician, a recoding of the answers was done to provide easier understanding. The results were not altered with this procedure.

A significant correlation was found between all pairs of variables. Moderate linear relationships were indicated between each pair of variables. Table 1 indicates that the strongest correlation (.798) was between Internet/Database (Research) Anxiety and Computer Anxiety components (Appendix A: Table 1). The second strongest correlation (.772) was between Library Anxiety and Internet/Database (Research) Anxiety. Library Anxiety and Computer Anxiety had a correlation of .710. The researcher renamed the library research anxiety component to Internet/Database (Research) when the running analysis.

The overall moderate relationship confirms the mechanic barrier portion of Onwuegbuzie’s study on library, statistical, and composition anxieties felt by graduate students in a research proposal writing class. He reported that library anxious students had a high level anxiety in the affective barriers and knowledge of the library and a moderate level of anxiety in mechanic barriers (1997d).

It is interesting to note though that both male and female students showed a higher correlation of Internet/Database (Research) Anxiety to Computer Anxiety (Appendix A: Figures 1 and 2) than when comparing Library Anxiety to Computer Anxieties (Appendix A: Figures 3 and 4) and Library Anxiety to Internet/Database (Research) Anxiety (Appendix A: Figures 5-6). Males showed a stronger correlation on all three

pairings of the Anxiety Scales than the females. Males were more consistent on the three scales than the females.

An independent “t-test” was run to determine if there were any gender differences in the mean anxiety of each scale. Results indicated there were not significant differences between genders in regard to all three-anxiety scales. While this contradicts the studies by Jiao and Onwuegbuzie (1995; 1997) and Jacobson (1991), it supports other studies (Chua et. al., 1999). The initial survey study had few male subjects (only 18 out of 79 subjects). Future research needs to be done that includes more male subjects to increase the study’s reliability and for comparison purposes (Appendix A: Table 2).

A regrouping of the age ranges to accommodate for a better statistical analysis was performed because the original choice of age grouping resulted in a number of groups that were not large enough to analyze. Figures 7-15 reflect ages 21-30, 31-40, and over 41 years of age respectively. Because of the larger amount of students in the 21-30 age category (61 out of 79), this division of students provided a better understanding of the age relationship between the anxieties. The Internet/Database (Research) Anxiety and Computer Anxiety Figures for all ages showed the strongest relationship for students (Appendix A: Figures 7, 8, 9).

Figure 10 showed that students in the 21 to 30 years of age range had a higher level of library and computer anxieties than students in either the 31 to 40-age range and the over 41 age range (Appendix A: Figures 11 and 12).

Figures 13-15 showed similar results for those students in the 21 to 30-age range who had more anxiety than the student in the other age ranges when comparing Library Anxiety to Internet/Database (Research) Anxiety (Appendix A: Figures 13, 14, 15).

The breakdown of demographic information of other variables relating to library and computer questions showed how and where graduate education students are conducting their research. Those students never coming to the library was 66% (Appendix A: Table 3). Of those that do go straight to the library, 32% come from home (Appendix A: Table 4). The nearest academic library that was not affiliated with the university where they were taking classes was 5 miles or less from the students' home or work for 27%, with another 23% being 21 or more miles away (Appendix A: Table 5). Those students who lived or worked 21 or more miles away from the nearest library affiliated with the university where they were taking classes was 43% (Appendix A: Table 6).

The final three tables were of special interest to the researcher. Table 7 reported the last time the students were required to do a research paper. Eight people did not respond to the question and one was coded as an error. The remaining 88% of the responses ranged from 44% to 11% (previous semester – 44%; previous year – 20%; 2-4 years ago – 13%; over 5 years ago – 11%) (Appendix A: Table 7). Those students who had previously received library instruction were 76% (Appendix A: Table 8). Research was done mainly with the Internet (49%), database searching (37%) and using the online library catalog for books and other materials (4%) (Appendix A: Table 9).

Discussion

The major weakness in this study was the small number of people sampled and number of males represented. The subjects were in three different locations for the same class taught by the same professor at the same time, two classes through distance education technology. The largest sampling was from the “remote” campus. These

students have a very different library experience than those students closer to the library affiliated of the university. The nature of their library experience is very different from the other two samplings. The incentive to travel 3 hours to the nearest affiliated library is minimal. The off-campus students might be more at ease with computers and be more skilled in library research because of their unique and different situation from those attending classes closer to the main university library. The answers from the off-campus students could therefore alter the results of the study. Further analysis of the data might reveal interesting findings if each campus is analyzed separately.

There were at least 7 blank answers in all the demographic results of Tables 2, 4, 5, and 7. Table 3 had thirty left blank. Tables 6 and 8 had 8 blanks. Table 6 also had one error recorded that was the result of an incomplete erasure. The last seven questions on the demographic section were located on the back of the last page. It is possible that 7 subjects were not aware of their presence. The thirty blank responses in Table 3 are not as easily explained. There is the possibility that the confusion of the statement caused these subjects not to answer this question. Table 8 dealt with the terms Internet, database, and online library catalog. It is surmised that this it is possible that subjects may have been confused about the difference between the three terms.

The initial results of a moderate level of correlations among for computer, library research, and library anxieties were disappointing for the researcher. The successes and failures of the initial pilot survey cannot be measured by the results of the survey for the researcher. This first time experience of developing, writing, administering, and analyzing a survey was a very valuable learning activity. The researcher will continue

working on the survey instrument to refine it and to develop a useful, reliable, and valid instrument that will measure computer, library research, and library anxieties.

Conclusion

Graduate education students are required to maintain a high level of currency for teaching certification and job advancement. In 1998, 114,692 students earned a master's degree in education and 6,729 received a doctorate in education. Business and engineering students came in a distant second respectively (U.S. Dept. of Commerce, 2001). It is vital to understand the computer and library anxieties of pre-service and in-service teachers because they are often the role models who introduce technology in the lives of their students (Brosan, 1998; Rosen & Weil, 1995; Yildirim, 2000).

This becomes important if one uses the statistics mentioned in the literature review for each anxiety. That means 5% of the 114,692 teachers, or 5,735 teachers returning to graduate schools, could be severely computerphobic. If the average elementary teacher has the average of twenty-five students per class per year, then these teachers could be unconsciously influencing 143,300 students a year. If only 14% feel knowledgeable about library sources and services, that means that 86% of graduate students do not. Eighty-six percent of the 114,692 graduate education teachers, or 98,635 elementary teachers, could possibly be unconsciously negatively influencing 246,600 students a year regarding library research. If we use Mellon's low figure of 75% of students having library anxiety, then 86,019 graduate education students who have some level of library anxiety. Those 86,019 teachers are in contact with to 215,047 students a year and unconsciously reflecting a negative desire to come to the library. It is acknowledged that not all 114,692 graduate education students are elementary teachers.

But if one even takes into account the increased number of students with whom teachers in the middle school to secondary schools have contact with daily, then the potential total numbers of students could be even higher.

It becomes imperative that administrators within the school systems, college and university education departments, librarians, and others who have contact with the pre-service and in-service teachers address computer and library anxieties. Today's teachers are the ones influencing the next generation of computer and library users.

What makes studying computer, library research and library anxieties difficult is that it involves continual changing variables. The study of anxiety will always be a difficult endeavor because it involves the self-perception of people reacting to other variables that will always change – technology. The continual improvements and changes in library technology will “continue to challenge any stable view of information needs” (Westbrook & DeDecker, 1993, p. 44.), and there will always be “great deal of variance in what people find threatening in a library environment” (Zahner, 1993, p. 7). A researcher of library anxiety must be flexible enough to realize that there will never be one instrument that will be universal applicable for all times. Libraries and those they serve are not in Kansas anymore.

Dissemination

The dissemination of the findings of the thesis included the presenting of the initial results of the pilot study to the Association of Teachers Educators in Denver, CO., on February 4, 2002. A paper will be presented based on the research at the Association of College and Research Libraries Conference in Charlotte, N.C., on April 11, 2003.

The researcher hopes to use the first survey to develop a revised questionnaire. Those questions, which had a significant ranking, will be kept. Positive and negative wording of those questions will be asked to measure internal consistency and validity. Confusing questions will be restated. The researcher will review the demographic information and refine those variables, which would be of interest for analysis. The second set of survey questions will be administered to a larger number of graduate education students. A second revision of the instrument and administration is planned for January 2003. It is hoped the results of the second study could be presented to the researcher's education faculty.

A third survey based on the results of the second set of questions will be developed and administered to a larger population, both graduate and undergraduate students, at the same university. It is hoped that the survey instrument could be eventually administered nation wide to measure validity and reliability. The third administration of the survey questions would assist in establishing dependability and validity of the instrument.

Appendix A

References

- Ayersman, D.J. (1996). Effects of computer instruction, learning style, gender, and experience on computer anxiety. *Computers in the School, 12*(4), 15-30.
- Benson, L.D. (1995). Scholarly research and reference service in the automated environment. In P.M. Baxter (Ed.), *Social science reference services* (pp. 57-69). New York: Haworth Press.
- Berghel, H. (2000). World-Wide-Web. In A. Ralston, E.D. Reilly, & D. Hemmendinger (Eds.). *Encyclopedia of Computer Science* (4th ed., 1867-1874). London: Nature Publishing Group.
- Blandy, S.G. & Libutti, P.O. (1995). As the cursor blinks: Electronic scholarship and undergraduates in the library. *Library Trends, 44*, 279-305.
- Bostick, S.L. (1992). The development and validation of the library anxiety scale (Doctoral dissertation: Wayne State University, 1992). *Dissertation Abstracts International, 53*, 4116.
- Brookfield, S. (1995). *Becoming a critically reflective teacher*. San Francisco: Jossey-Bass Publishers.
- Brosnan, M.J. (1998). The impact of psychological gender, gender-related perceptions, significant others, and the introducer of technology upon computer anxiety in students. *Journal of Educational Computing Research, 18*, 63-78.
- Brosnan, M.J. (1998b). *Technophobia: The psychological impact of information technology*. New York: Routledge, 1998.

- Burton, V.T. and Chadwick, S.A. (2000). Investigating the practices of student researchers: Patterns of use and criteria for use of Internet and library sources. *Computers and Composition, 17*, 309-328.
- Calvert, L.M.G. (1999). A dependence on technology and algorithms or a lack of number sense? *Teaching Children Mathematics, 6*(1), 6.
- Cambre M.A. & Cook, D.L. (1987). Measurement and remediation of computer anxiety. *Educational Technology, 27*(12), 15-20.
- Charny, B. (2000). World Wide \$#@%@\$ing Web! *ZDNet News*. Retrieved June 21, 2002 from <http://zdnet.com.com/2100-11-526590.html>
- Chou, H-W. (2001). Effects of method and computer anxiety on learning performance and self-efficacy. *Computers in Human Behavior, 17*, 51-69.
- Chua, S.L., Chen, D-T., & Wong, A.F.L. (1999). Computer anxiety and its correlates: A meta-analysis. *Computers in Human Behavior, 15*, 609-623.
- Cleveland, A. M. (2001). Reducing library anxiety in first-year students: Computer assisted instruction (Master thesis, University of North Carolina at Chapel Hill, N.C., 2001).
- Collins, B.L., Mellon, C.A., & Young, S.B. (1987). Needs and feelings of beginning researchers. IN C. Mellon (Ed.) *Bibliographic instruction: The second generation*. Littleton, CO: Libraries Unlimited, Inc., 73-84.
- Crawford, W. & Gorman, M. (1995). *Future libraries: Dreams, madness, and reality*. Chicago, ALA.
- Croft, J.B. (2001). Changing research patterns and implications for web page design: Ranganathan revisited. *College & Undergraduate Libraries, 8*, 69-77.

- Crowe, K.M. & McKee, A.J. (1995). The adult learner and the new technology. In R. AmRhein (Ed.), *Continuity & transformation: The promise of confluence* (pp. 460-461). Chicago: Association of College and Research Libraries.
- Curry, E.L. (2001). Introduction: Technological advances in reference: A paradigm shift? *Library Trends*, 50, 165-167.
- DeLoughry, T.J. (1993, April 28). Two researchers say "technophobia" may afflict millions of students." *The Chronicle of Higher Education*, A25.
- Dolman, A.U. (1996). Predicting library anxiety, computer anxiety, and library performance (Master thesis, University of North Carolina at Chapel Hill, NC., 1996).
- Dougherty, R.M. (2002). Reference around the clock: Is it in your future? *American Libraries*, 33(5), 44, 46.
- Dreifuss, R.A. (1981). Library instruction and graduate students: more work for George. *RQ*, 21(2), 121-123.
- Egan, P.J. (1992). Bridging the gap between the student and the library. *College Teaching*, 40, 67-70.
- Fliotsos, A. (1992). Anxiety layering: The effects of library and computer anxiety on CD-ROM use. *Southeastern Librarian*, 42(2), 47-49.
- Frاند, J.L. (2000). The information-age mindset: Changes in students and implications for higher education. *Educause Review*, 35(5), 14-24.
- Goldsborough, R. (2002, May). Overcoming fear of PCs. *Poptronics*, 3(5), 51-53.
- Good, C.F. (Ed.) (1973). *Dictionary of education*. New York: McGraw-Hill Book Company.

- Gordon, C.A. (2002). A room with a view: Looking at school library instruction from a higher education perspective. *Knowledge Quest*, 30(4), 16-21.
- Green, B. (1991). *Timetables of history*. (3rd ed.) New York: Touchstone Book.
- Grimes, D.J. & Boening, C.H. (2001). Worries with the web: A look at student use of web resources. *College & Research Libraries*, 62, 11-23.
- Hart, C. (1998). *Doing a literature review: Releasing the social science research imagination*. Thousand Oaks: SAGE Publications.
- Heinssen, Jr., R.K., Glass, C.R., & Knight, L.A. (1987) Assessing computer anxiety: Development and validation of the computer anxiety rating scale. *Computers in Human Behavior*, 3, 49-59.
- Hillemans, A. & Bunch, B. (1991). *Timetables of science*. New York: Touchstone Book.
- Hudiburg, R.A. (1989). Psychology of computer use: XVII. The computer technology hassles scales: Revision, reliability, and some correlates. *Psychological Reports*, 65, 1387-1394.
- Hudiburg, R.A., & Necessary, J.R. (1996). Coping with computer-stress. *Journal of Educational Computing Research*, 15, 113-124.
- Jacobson, F.F. (1991). Gender differences in attitudes toward using computers in libraries: An exploratory study. *Library Information Science Research*, 13, 267-279.
- Jerabek, J.A., Meyer, L.S., & Kordinak, S.T. (2001). "Library anxiety" and "computer anxiety:" Measures, validity, and research implications. *Library & Information Science Research*, 23, 277-289.

- Jiao, Q.G., & Onwuegbuzie, A.J. (1995). Library anxiety: Characteristics of 'at-risk' college students. Biloxi, MS: Paper presented at the Annual Conference of the Mid-South Educational Research Association, November 9, 1995. (ERIC Document Reproduction Service No. ED416896)
- Jiao, Q.G., & Onwuegbuzie, A.J. (1997). Antecedents of library anxiety. *Library Quarterly*, 67, 372-389.
- Jiao, Q.G., & Onwuegbuzie, A.J. (1997b). Factors associated with library anxiety. Chicago: Paper presented at the Annual American Educational Research Association Conference, March 24-28, 1997. (ERIC Document Reproduction Service No. ED416895)
- Jiao, Q.G., & Onwuegbuzie, A.J. (1998). Perfectionism and library anxiety among graduate students. *Journal of Academic Librarianship*, 24, 365-371.
- Jiao, Q.G., & Onwuegbuzie, A.J. (1999). Identifying library anxiety through students' learning-modality preferences: Librarians need to share information to make library a powerful vehicle. *Library Quarterly*, 69, 202-211.
- Jiao, Q.G., & Onwuegbuzie, A.J. (1999b). Is library anxiety important? *Library Review*, 48, 278-282.
- Jiao, Q.G., & Onwuegbuzie, A.J. (1999c). Library anxiety among international students. Point Clear, AL: Paper presented at the Annual Meeting of the Mid-South Education Research Association. November 17-19, 1999. (ERIC Document Reproduction Service No. ED437973)
- Jiao, Q.G., & Onwuegbuzie, A.J. (1999d). Self-perception and library anxiety: An empirical study. *Library Review*, 48, 140-147.

- Jiao, Q.G., Onwuegbuzie, A.J., & Daley, C.E. (1997). Prevalence and reasons for university library usage. Memphis, TN: Poster presented the Annual Conference of the Mid-South Educational Research Association, November 13, 1997. (ERIC Document Reproduction Service No. ED417735)
- Keefer, J. (1993). The hungry rats syndrome: Library anxiety, information literacy, and the academic reference process. *RQ*, 32, 333-339.
- Kernan, M.C., & Howard, G.S. (1990). Computer anxiety and computer attitudes: An investigation of construct and predictive validity issues. *Educational and Psychological Measurement*, 50, 681-690.
- King, D.N., & Ory, J.C. (1981). Effects of library instruction on student research: A case study. *College & Research Libraries*, 42, 31-41.
- Kupersmith, J. (1987). "Library anxiety" and library graphics. *Research Strategies*, 5, 36-38.
- Landrum, R.E., & Muench, D.M. (1994). Assessing students' library skills and knowledge: The library research strategies questionnaire. *Psychological Reports*, 75, 1619-1628.
- Laskowski, M.S. (2002). The role of technology in research: Perspectives from students and instructors. *portal: Libraries and the Academy*, 2, 305-319.
- Lawrence, S., & Giles, C.L. (1999). Accessibility of information on the web. *Nature*, 400(6740), 107-109.
- Lenski, S.D. and Johns, J.L. (1997). Patterns of reading to write. *Reading Research and Instruction*, 37, 15-38.

- Leso, T. and Peck, K. (1992). Computer anxiety and different types of computer courses. *Journal of Educational Computing Research*, 8, 469-478.
- Liu, L., & Johnson, D.L. (1998). A computer achievement model: computer attitude and computer achievement. *Computers in the Schools*, 14(3/4), 33-53.
- Loyd, B.H. & Gressard, C. (1984). The effects of sex, age, and computer experience on computer attitudes. *AEDS Journal*, 17, 67-76.
- MacDonald, R., & Dunkelberger, R. (2000). Full-text database dependency: An emerging trend among undergraduate library users? *Research Strategies*, 16, 301-307.
- Marcoulides, G.A. (1989). Measuring computer anxiety: The computer anxiety scale. *Educational and Psychological Measurement*, 49, 733-739.
- Maurer, M.M., & M.R. Simonson, M.R. (1984). Development and validation of a measure of computer anxiety. (ERIC Document Reproduction Service No. ED243428)
- McInerney, V., Marsh, H.W., & McInerney, D.M. (1999). The designing of the computer anxiety and learning measure (CALM): Validation of scores on a multidimensional measure of anxiety and cognitions relating to adult learning. *Educational and Psychological Measurement*, 59, 451-470.
- Mech, T.F., & Brooks, C.I. (1995). Library anxiety among college students: An exploratory study. In R. AmRhein (Ed.), *Continuity & transformation: The promise of confluence* (pp. 173-179). Chicago: Association of College and Research Libraries.
- Mellon, C.A. (1986). Library anxiety: A grounded theory and its development. *College and Research Libraries*, 47, 160-165.

- Mellon, C.A. (1988). Attitudes: The forgotten dimension in library instruction. *Library Journal*, 113(4), 137-139.
- Mellon, C.A. (1989). Library anxiety and the non-traditional student. In T.B. Mensching (Ed.), *Reaching and teaching library user groups* (pp. 77-81). Ann Arbor, MI: Pierian Press.
- Mohundro, J.L. (1999). The effectiveness of bibliographic instruction on reducing library anxiety in GED students at a community college. (Doctoral dissertation: Texas A&M University, 1990). *Dissertation Abstracts International*, 51, 1867.
- Moore, M.M. (2002). Rage against the machine: Why do we love to complain about technology? Is it fear, anger or just plain stress? *Darwin*, 2, 56-60.
- Morner, C.J. (1995). Measuring the library research skills of education doctoral students. In R. Amrhein (Ed.), *Continuity & transformation: The promise of confluence*. (pp.381-391). Chicago: Association of College and Research.
- Murry, J.W., McKee, E.C., & Hammons, J.O. (1997). Faculty and librarian collaborations: The road to information literacy for graduate students. *Journal on Excellence in College Teaching*, 8, 107-121.
- Nahl, D. (1993). Guidelines for creating user-centered instructions for novice end-users. In L. Shirato (Ed.), *The impact of technology on library instruction*. (pp. 9-22). Ann Arbor, MI: Pierian Press.
- Nahl, D. (1997). Information counseling inventory of affective and cognitive reactions while learning the Internet. *Internet Reference Services Quarterly*, 2(2/3), 11-33.

- Napier, J.D. (1978/79). An experimental study of the relationship between attitude toward and knowledge of educational research. *Journal of Experimental Education*, 47, 131-134.
- Oberman, C. (1991). Avoiding the cereal syndrome, or critical thinking in the electronic environment. *Library Trends*, 39, 189-202.
- OneStat.com: Google is the most popular search engine on the web according to OneStat.com. (2002, April 15). *Coventry*. Retrieved May 26, 2002, from ProQuest database.
- Onwuegbuzie, A.J. (1997). The role of technology in the library anxiety of Arkansas college students. *Arkansas Association of Instructional Media Quarterly*, 30, 6-8.
- Onwuegbuzie, A.J. (1997b). The teacher as researcher: The relationship between enrollment time and achievement in a research methodology course. *Research and Reflection*, 3(1). Retrieved September 30, 2000 from <http://www.gonzaga.edu/rr/v3n1/tony.html>
- ALSO: *College Student Journal* (1997), 31, 496-506.
- Onwuegbuzie, A.M. (1997c). The teacher as researcher: The relationship between research anxiety and learning style in a research methodology course. *College Student Journal*, 31, 496-506.
- Onwuegbuzie, A.J. (1997d). Writing a research proposal: The role of library anxiety, statistics anxiety, and composition anxiety. *Library & Information Science Research*, 19, 5-33.

- Onwuegbuzie, A.J. (1998). The underachievement of African American teachers in research methodology courses: Implications for the supply of African American school administrators. *Journal of Negro Education, 67*(1), 67-78.
- Onwuegbuzie, A.J. (2000). Statistics anxiety and the role of self-perceptions. *Journal of Educational Research, 93*, 323-330.
- Onwuegbuzie, A.J., & Daley, C.E. (1997). Learning style and achievement in a course on research methods. *Psychological Reports, 80*, 496-498.
- Onwuegbuzie, A.J., & Jiao, Q.G. (1998). The relationship between library anxiety and learning styles among graduate students: Implications for library instructions. *Library and Information Science Research, 20*, 235-249.
- Onwuegbuzie, A.J., & Jiao, Q.G. (1998b). Understanding library-anxious graduate students. *Library Review, 47*, 217-224.
- Onwuegbuzie, A.J., & Jiao, Q.G. (2000). I'll go to the library later: The relationship between academic procrastination and library anxiety. *College and Research Libraries, 61*, 45-54.
- Ostrow, R.L. (1998). Library culture in the electronic age: A case study of organizational change. (Doctoral dissertation: State University of New Jersey – Rutgers.)
- Parker-Gibson, N. (2001). Library assignments: Challenges students face, and how to help. *College Teaching, 49*, 65-70.
- Patrick, S., & Matthews, C. (2002). Ask a librarian LIVE. *College & Research Libraries News, 63*, 280-281.

- Popovich, P.M., Hyde, K.R., Zakrajsek, T., & Blumer, C. (1987). The development of the Attitudes Toward Computer Usage Scale. *Educational and Psychological Measurement, 47*, 261-269.
- Presno, C. (1998). Taking the byte out of Internet anxiety: Instructional techniques that reduce computer/Internet anxiety in the classroom. *Journal of Educational Computing Research, 18*(2), 147-161.
- Quinn, B. (2000). Overcoming technostress in reference services to adult learners. In Sarkodie-Mensah, K. (Ed.), *Reference services for the adult learner: Challenging issues for the traditional and technological era*. New York: Haworth Press, 49-62.
- Ren, W-H. (2000). Library instruction and college student self-efficacy in electronic information searching. *Journal of Academic Librarianship, 26*, 323-328.
- Rogers, S.J. (1987). Science of knowledge. In C.A. Mellon (Ed.), *Bibliographic Instruction: The second generation*. Littleton, CO: Libraries Unlimited, Inc., 125-133.
- Rosen, L.D., Sears, D.C., & Weil, M.M. (1987). Computerphobia. *Behavior Research Methods, Instruments, and Computers, 19*, 167-179.
- Rosen, L.D., & Weil, M.M. (1990). Computers, classroom instruction, and the computerphobic university student. *Collegiate Microcomputer, 8*, 275-283.
- Rosen, L.D., & Weil, M.M. (1995). Computer availability, computer experience and technophobia among public school teachers. *Computers in Human Behavior, 11*, 9-31.
- Russell, A.L. (1996). Six stages for learning to use technology. Indianapolis, IN: Proceedings of Selected Research and Development Presentations at the 1996

- National Convention of the Association for Educational Communications and Technology. (ERIC Document Reproduction Service No. ED397832)
- Saunders, L.M. (1999). The human element in the virtual library. *Library Trends*, 47, 771-787.
- Schaffner, B.L. (2001). Electronic resources: A wolf in sheep's clothing? *College & Research Libraries*, 62, 239-249.
- Schaller, J., & Parker, R. (1997). Effect of graduate research instruction on perceived research anxiety, research utility, and confidence in research skills. *Rehabilitation Education*, 11, 273-287.
- Scott, J., Trimble, J.A., & Fallon, L.F. (1995). @*!#@ This computer and the horse it rode in on: Patron frustration and failure at the OPAC. In R. AmRhein (Ed.), *Continuity & transformation: The promise of confluence*. (pp. 247-256). Chicago: Association of College and Research.
- Shen, Z., & Gresham, K. (2000). When technology transforms research methodology: The role of librarians in reforming the curriculum. *Reference Services Review*, 28, 360-368.
- Short, B.G., & Szabo, M. (1974). Secondary school teachers' knowledge of and attitudes toward educational research. *Journal of Experimental Education*, 43, 75-78.
- Stamatoplos, A.C. (2000). An integrated approach to teaching research in a first-year seminar. *College Teaching*, 48, 335.
- Szymanski, E.M., Swett, E.A., Watson, E.A., Lin, S., & Chan, S. (1998). The effects of contextualized research instruction on research anxiety, perceived utility of

- research and confidence in research ability. *Rehabilitation Education*, 12, 347-360.
- Tenopir, C. (1994). The emotions of searching. *Library Journal*, 119(14), 134-135.
- Teoma aspires to compete with Google. (2002, May 16). *Computimes Malaysia*. Retrieved May 26, 2002, from ProQuest.
- Turner, P.M., Kaske, M.K., & Baker, G.S. (1990). The effects of baud rate, performance anxiety, and experience on online bibliographic searches. *Information Technology and Libraries*, 9, 34-42.
- U.S. Department of Commerce (2001). Masters and Doctorate Degrees Earned by Field, 1971-1998. *Statistical Abstracts of the United States* (121st ed.). Retrieved June 14, 2002 from <http://www.census.gov/prod/2002pubs/01statab/educ.pdf>
- Valentine, B. (2001). The legitimate effort in research papers: Student commitment versus faculty expectations. *Journal of Academic Librarianship*, 27, 107-115.
- Wang, Y. (2000). Training teachers using computers. *T.H.E. Journal*, 27 (10), 66-74.
- Wei, R.P.C. (2002, May 16). Search engine technologies. *Computimes Malaysia*. Retrieved May 26, 2002, from ProQuest.
- Weinberg, S.B. & Fuerust, M. (1984). *Computerphobia : How to slay the dragon of computer fear*. Wayne, PA : Banbury Books.
- Westbrook, L., & DeDecker, S. (1993). Supporting user needs and skills to minimize library anxiety: Considerations for academic libraries. *Reference Librarian*, 40, 43-51.

- Wiberley, S. & Jones, W.G. (2000). Time and technology: A decade long look at humanists' use of electronic information technology. *College and Research Libraries, 61*, 421-431.
- Wilson, V.A. (1998). *A study of reduction of anxiety in graduate students in an introductory educational research course*. (New Orleans, LA: Paper presented at the Annual Meeting of the Mid-South Educational Research Association, November 4-6, 1998. (ERIC Document Reproduction Service No. ED427075)
- Worthington, V.L., & Zhao, Y. (1999). Existential computer anxiety and changes in computer technology: What past research on computer anxiety has missed. *Journal of Educational Computing Research, 20*(4), 299-315.
- Yildirim, S. (2000). Effects of an educational computing course on pre-service and in-service teachers: A discussion and analysis of attitudes and use. *Research on Computing in Education, 32*, 479-495.
- Young, N.J. & Von Seggern, M. (2001). General information seeking in changing times: A focus group study. *Reference & User Services Quarterly, 42*, 159-169.
- Zahner, J.E. (1993). *Thoughts, feelings and actions: Integrating domains in library instructions*. (New Orleans, LA: Proceedings of Selected Research and Development Presentations at the Convention of the Association for Educational Communication and Technology, January 13-17, 1993. ERIC Document Reproduction Service No. ED362215)
- Zhang, Y., & Espinoza, S. (1998). Relationships among computer self-efficacy, attitudes toward computers, and desirability of learning computing skills. *Journal of Research on Computing in Education, 30*, 420-436.

Appendix A

Table 1

Correlations of Computer Anxiety, Library Research Anxiety and Library Anxiety

		Average on Computer Anxiety Component	Average on Library Anxiety Component	Average on Internet/Database Component (left out 75)
Average on Computer Anxiety Scale	Pearson Correlation	1.000	.710**	.798**
	Sig. (2-tailed)	.	.000	.000
	N	79	79	79
Average on Library Anxiety Scale	Pearson Correlation	.710**	1.000	.772**
	Sig. (2-tailed)	.000	.	.000
	N	79	79	79
Average on Internet/Database Scale	Pearson Correlation	.798**	.772**	1.000
	Sig. (2-tailed)	.000	.000	.
	N	79	79	79

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

Figure 1

Internet/Database (Research) Anxiety Relation to Computer Anxiety of Males

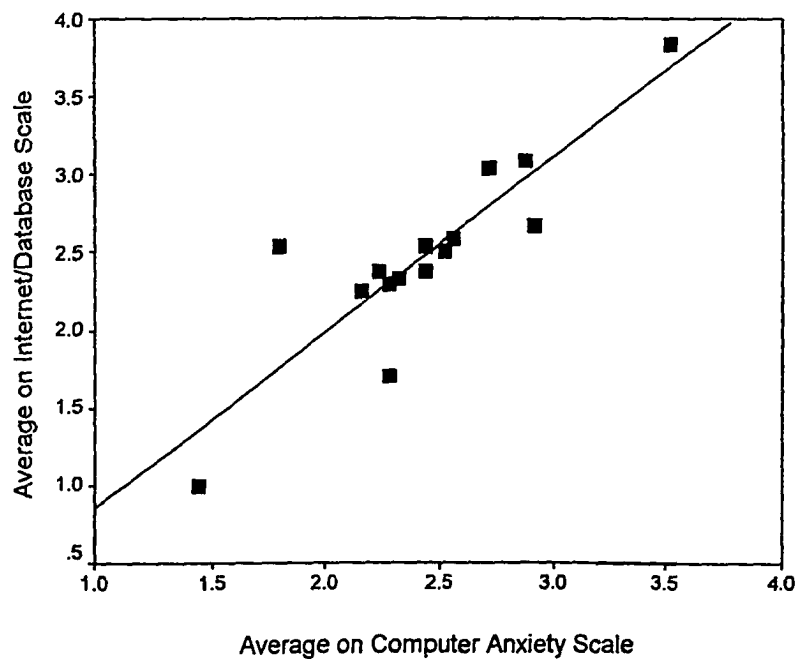


Figure 2

Internet/Database (Research) Anxiety Relation to Computer Anxiety for Females

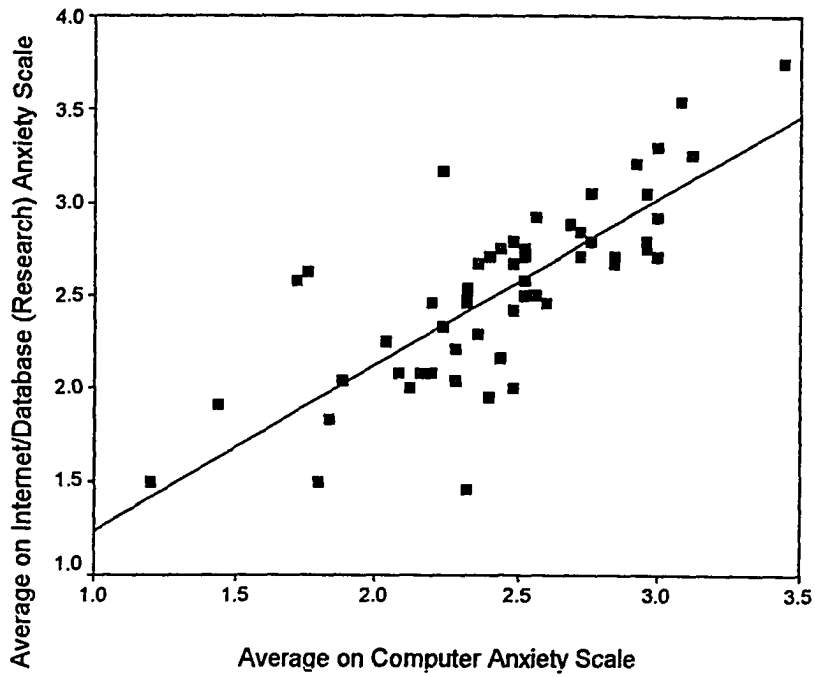


Figure 3

Library Anxiety Relation to Computer Anxiety for Males

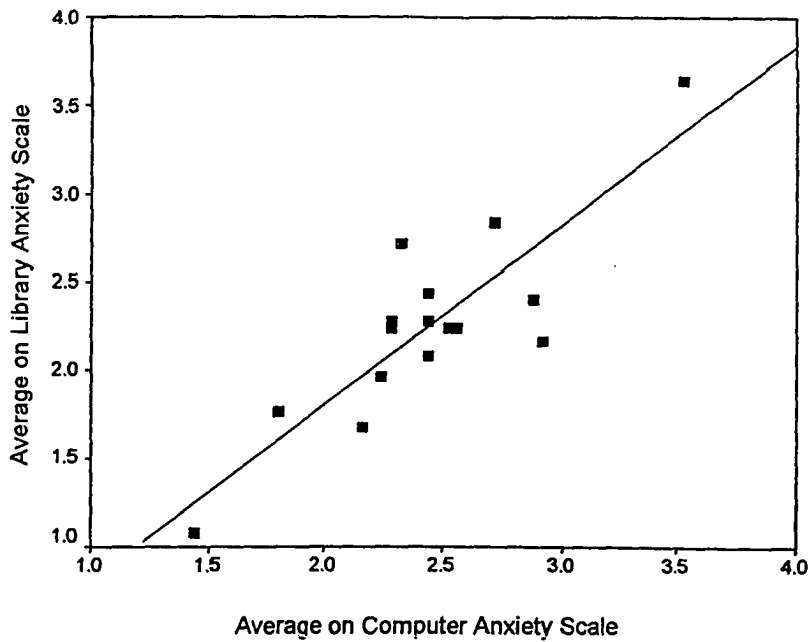


Figure 4

Library Anxiety Relation to Computer Anxiety for Females

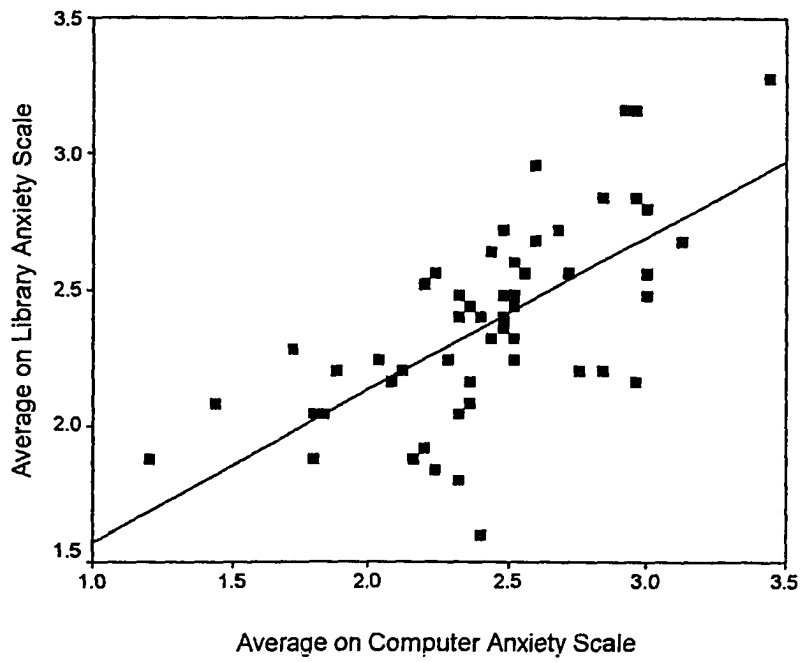


Figure 5

Library Anxiety Relation to Internet/Database (Research) for Males

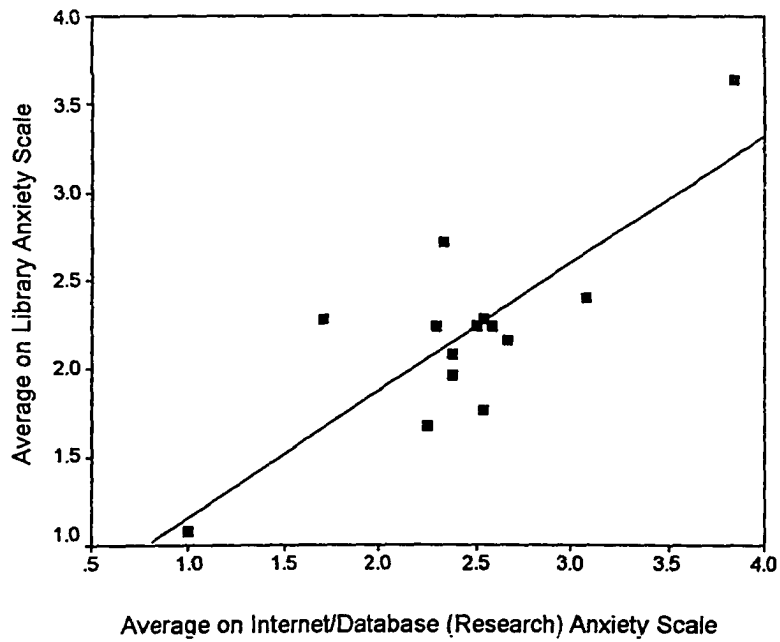


Figure 6

Library Anxiety Relation to Internet/Database (Research) Anxiety for Females

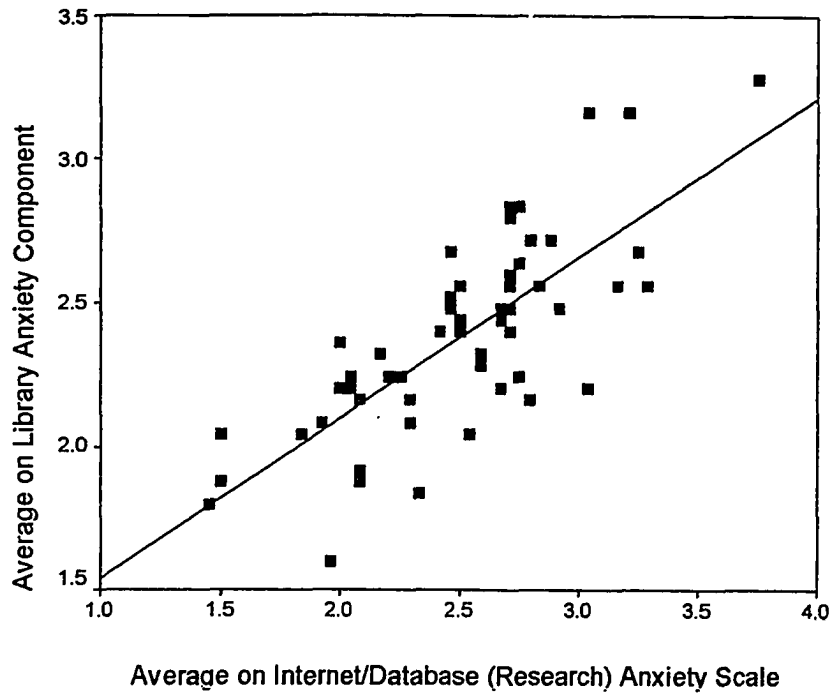


Table 2

T-test Results to Determine If Any Gender Differences Within Each Scale

	Gender	Sample Number	Mean	Std. Deviation
Average on Library Anxiety Scale	Male	16	2.2525	.5548
	Female	56	2.3807	.3521

	Gender	Sample Number	Mean	Std. Deviation
Average on Computer Anxiety Scale	Male	18	2.4467	.4451
	Female	60	2.4407	.4224

	Gender	Sample Number	Mean	Std. Deviation
Average on Internet/Database (Research) Scale	Male	15	2.4750	.6258
	Female	60	2.5132	.4836

Figure 7
Internet/Database (Research) Anxiety Relation to Computer Anxiety for 21-30 Years of Age

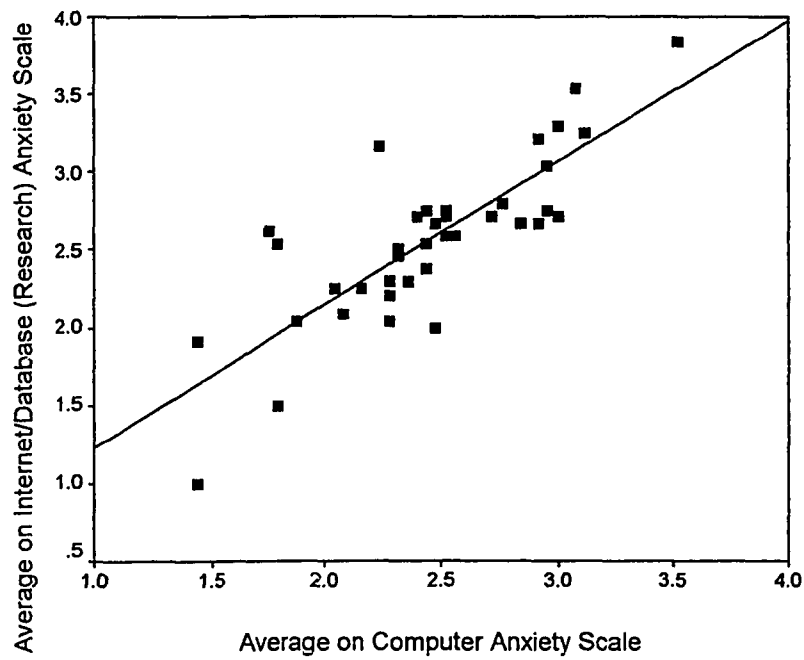


Figure 8
Internet/Database (Research) Anxiety Relation to Computer Anxiety for 31-40 Years of Age

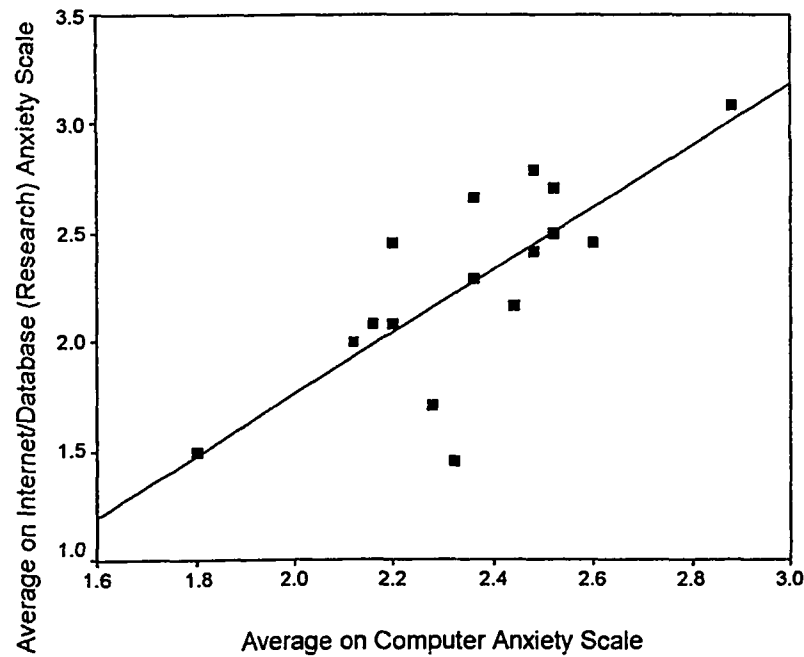


Figure 9
Internet/Database (Research) Anxiety Relation to Computer Anxiety for Over 41 Years of Age

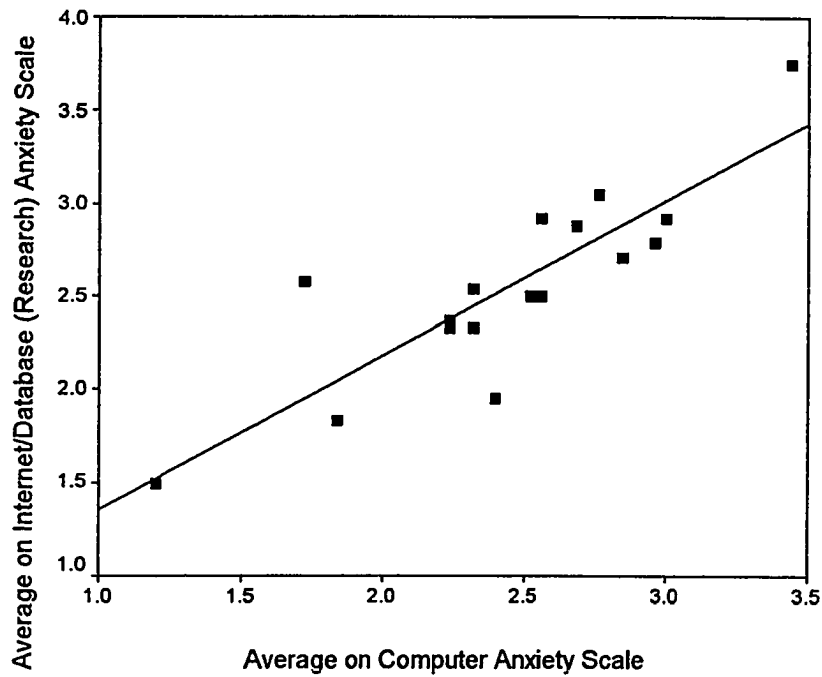


Figure 10
Library Anxiety Relation to Computer Anxiety for 21 to 30 Years of Age

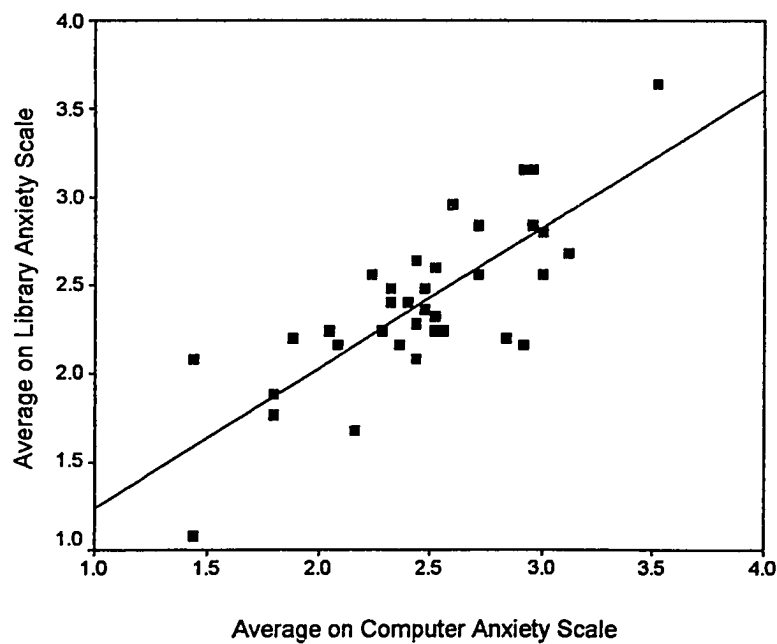


Figure 11
Library Anxiety Relation to Computer Anxiety for 31 to 40 Years of Age

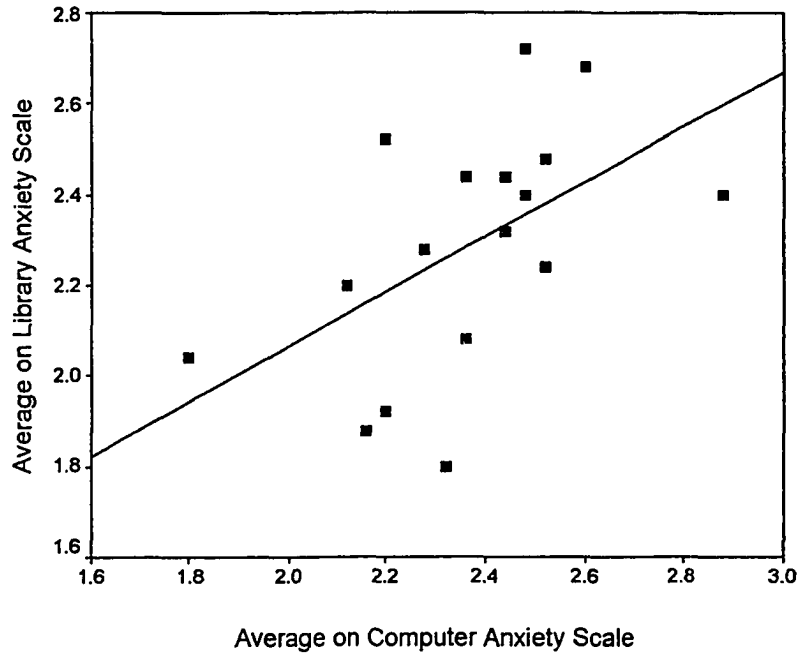


Figure 12
Library Anxiety Relation to Computer Anxiety for Over 41 Years of Age

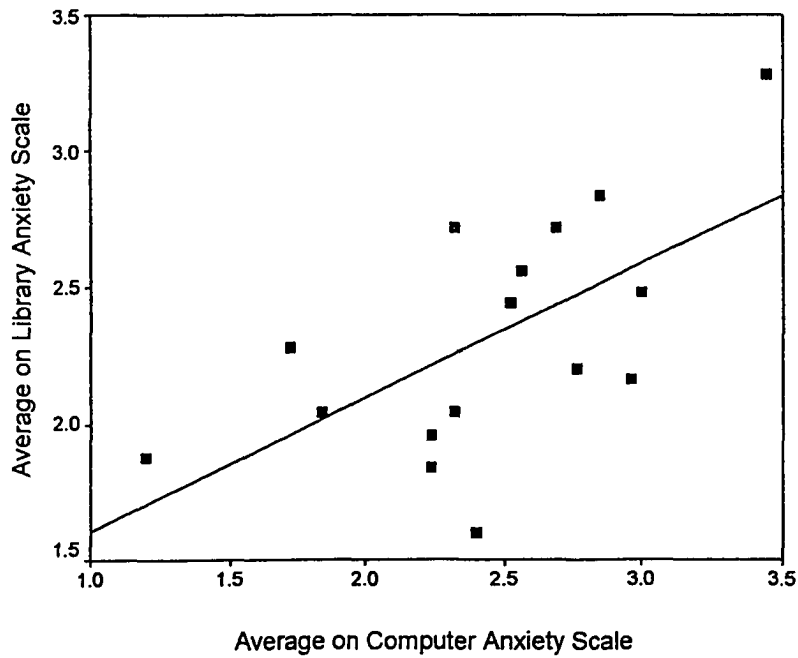
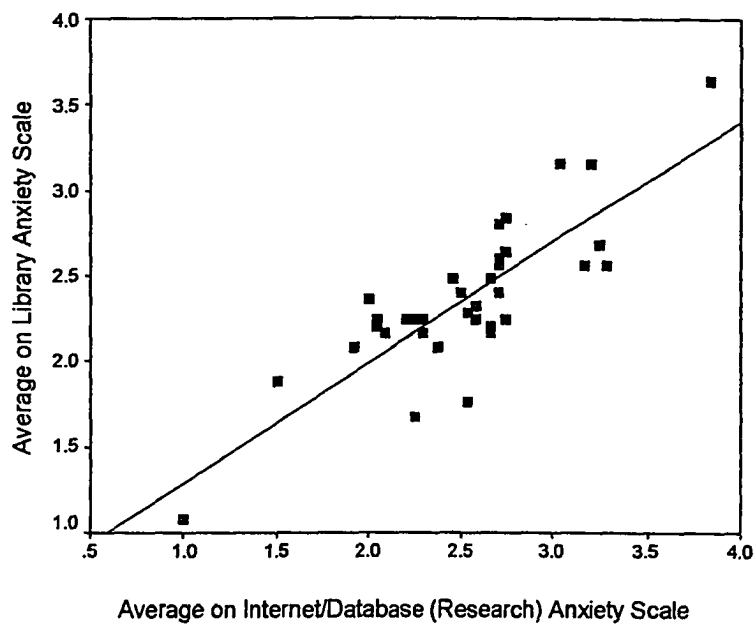


Figure 13
Library Anxiety Relation to Internet/Database (Research) Anxiety for 21 to 30 Years of



Age

Figure 14
Library Anxiety Relation to Internet/Database (Research) Anxiety for 31 to 40 Years of
Age

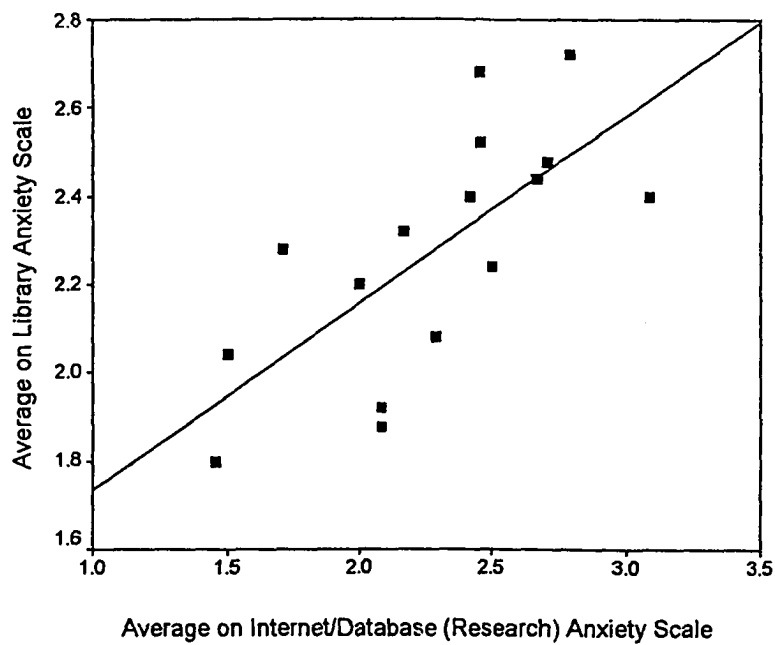


Figure 15

Library Anxiety Relation to Internet/Database (Research) Anxiety for Over 41 Years of Age

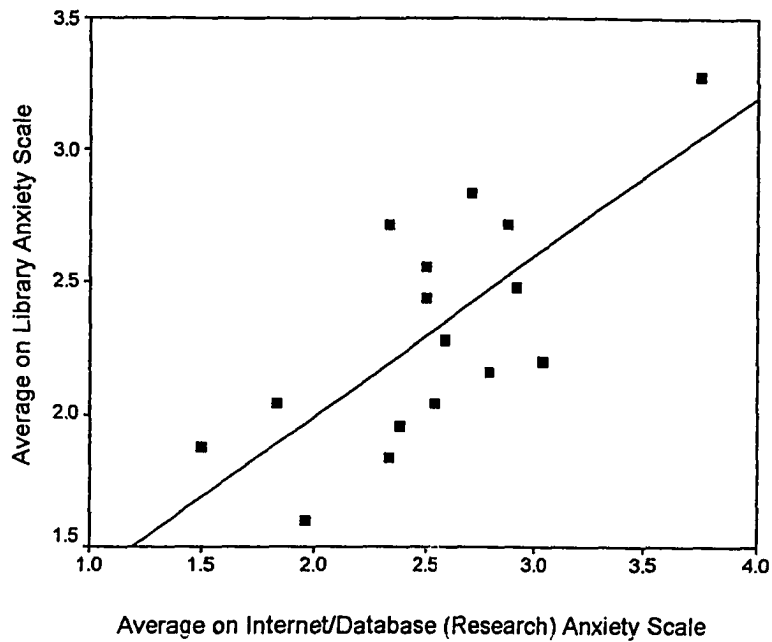


Table 3

Frequency Of On-Campus Library Visits

		Frequency	Valid Percent
Valid	Weekly	7	9.7
	Never	52	72.2
	Monthly	13	18.1
	Total	72	100.0
Missing	Blank	7	
Total		79	

Table 4

Frequency Of Those Visiting The Library Straight From Home Or Work

		Frequency	Valid Percent
Valid	Home	25	51.0
	Work	24	49.0
	Total	49	100.0
Missing	Blank	30	
Total		79	

Table 5

Distance To The Nearest Academic Library NOT Affiliated With The University Where Taking Classes

		Frequency	Valid Percent
Valid	0-5 miles	21	29.2
	6-10 miles	15	20.8
	11-15 miles	9	12.5
	16-20 miles	9	12.5
	21+ miles	18	25.0
	Total	72	100.0
Missing	Blank	7	
Total		79	

Table 6

Distance To The Nearest Library Affiliated WITH The University Where Taking Classes

		Frequency	Valid Percent
Valid	0-5 miles	11	15.3
	6-10 miles	13	18.1
	11-15 miles	7	9.7
	16-20 miles	7	9.7
	21+ miles	34	47.2
	Total	72	100.0
Missing	Blank	7	
Total		79	

Table 7

Last Time Writing A Research Paper Requiring The Use Of The Library Or Database

		Frequency	Valid Percent
Valid	Last semester	35	49.3
	Last year	16	22.5
	2-4 years ago	10	14.1
	Over 5 years ago	9	12.7
	E	1	1.4
	Total	71	100.0
Missing	Blank	8	
Total		79	

Table 8

Previous Library Instructions

		Frequency	Valid Percent
Valid	Yes	60	83.3
	No	12	16.7
	Total	72	100.0
Missing	Blank	7	
Total		79	

Table 9

Research Done Mainly Using The Internet, Database, Or the Online Library Catalog

		Frequency	Valid Percent
Valid	Internet	39	54.9
	Databases	29	40.8
	Online library catalog	3	4.2
	Total	71	100.0
Missing	Blank	8	
Total		79	

Appendix B



GRAND VALLEY
STATE UNIVERSITY

| CAMPUS DRIVE • ALLENDALE, MICHIGAN 49401-9403 • 616/895-6611

September 6, 2001

Rita Kohrman Vandermeer
Grand Valley State University
Zumberge Library
304 JHZ

RE: Proposal #01-178-H

Dear Rita:

Your proposed project entitled **Development of a Computer/Library Anxiety Scale (CLAS)** has been reviewed. It has been approved as a study, which is exempt from the regulations by section 46.101 of the Federal Register 46(16):8336, January 26, 1981.

Sincerely,



Paul Huizenga, Chair
Human Research Review Committee

GRAND VALLEY STATE UNIVERSITY
ED 695 Data Form

Name: Rita Kohrman

Major: (Choose only 1)

<input type="checkbox"/> Ed Tech	<input type="checkbox"/> Ed Leadership	<input checked="" type="checkbox"/> Sec/Adult
<input type="checkbox"/> Elem Ed	<input type="checkbox"/> G/T Ed	<input type="checkbox"/> Early Child
<input type="checkbox"/> Elem LD	<input type="checkbox"/> Sec LD	<input type="checkbox"/> SpEd PP
	<input type="checkbox"/> Read/Lang Arts	

Title: When You Aren't in Kansas Any More: Computer, Research, and Library Anxieties of Graduate Education Students

Paper Type: (Choose only 1)

Sem/Yr Completed: Spring/Summer 2002

Project
 Thesis

Supervisor's Signature or Approval: _____

Using the ERIC thesaurus, choose as many descriptors (5 – 7 minimum) to describe the contents of your paper.

- | | |
|-----------------------|---------------------------------|
| 1. Anxiety | 6. Library skills |
| 2. Library research | 7. Information literacy |
| 3. Computer anxiety | 8. Information skills |
| 4. Literature reviews | 9. Technology uses in education |
| 5. Research | 10. |

Abstract: Two or three sentences that describe the contents of your paper.

Library anxiety is accepted as a valid, unique phenomenon and is recognized as a major stumbling block when writing at the graduate research level. Many students are also unprepared for the intricacy of graduate level research. They discover their research skills are inadequate for computerized libraries when they return to universities or colleges for graduate studies after being away from academic studies. They must not only learn research skills, some truly learning for the first time, but also learn an online catalog, databases, Interlibrary Loan/Document Delivery procedures, electronic reserves, and other technical library applications. All of these factors become a source of anxiety.