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To the Graduate Council:

I am submitting herewith a thesis written by Wesley S. King entitled "Computer anxiety in an introductory computer course by Keirsev temperament styles, age, gender, and computer experience." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Human Resource Development.

Ernest W. Brewer, Major Professor

We have read this thesis and recommend its acceptance:

Gregory Petty, Virginia Kupritz

Accepted for the Council:

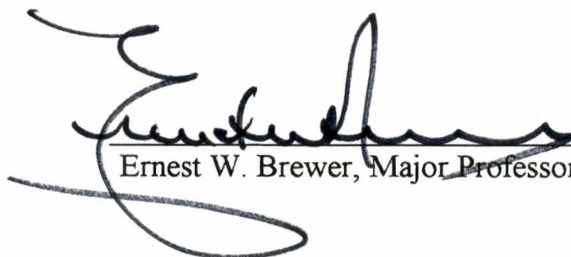
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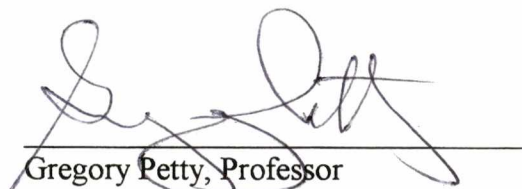
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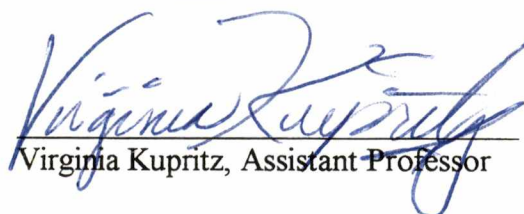


Ernest W. Brewer, Major Professor

We have read this thesis and
recommend its acceptance:




Gregory Petty, Professor



Virginia Kupritz, Assistant Professor

Accepted for the Council:



Associate Vice Chancellor and
Dean of The Graduate School

**COMPUTER ANXIETY IN AN INTRODUCTORY COMPUTER COURSE BY
KEIRSEY TEMPERAMENT STYLES, AGE, GENDER, AND COMPUTER
EXPERIENCE**

A Thesis

Presented for the

Master of Science

Degree

The University of Tennessee, Knoxville

Wesley S King

May, 2000

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DEDICATION

This thesis is dedicated to my parents

Richard L. and W. Sue King

for believing in me through all of my endeavors

They have always been the first in line to offer
support and guidance to point me in the right direction

They will forever have an impact on my life

ACKNOWLEDGEMENTS

I would first like to thank Dr Ernest W Brewer, Professor of the Department of Human Resource Development and Department Head of Child and Family Studies, for chairing my committee. He urged me to undertake this research study and assured me of the pride that would follow its completion. He instilled the necessity for accuracy, rigor, and precision to ensure quality research. Most importantly, his professional guidance and leadership throughout my graduate career was unequalled.

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I also extend a special thanks to Paula, my partner in life, who motivated me in times of desperate need. She provided the fire for the candle that I often burnt into the lonely hours of the night. With her by my side, most anything is possible and certainly enjoyable.

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the sake of research. Many thanks also go to my statistical consultant, Mike O'Neil. To Paul Tanaka, my statistical guru and true friend, he always managed to delve through my madness to execute statistical perfection. To Renee' Theobald, her solace and assurance made it possible to see the light at the end of the tunnel.

My parents, to whom I dedicated this research, deserve much of the credit for this research. They implanted the importance of quality education. Lastly, acknowledgment would not be complete without thanking my late grandmother whose unselfish love I will forever remember.

I extend to all of my friends, family, and loved ones an enormous thank you for the patience and understanding shown throughout this important step in my life. The culmination of everyone's encouragement and contribution made this journey possible.

ABSTRACT

The purpose of the current study was to determine whether or not a significant relationship existed between students' temperament styles and their degree of computer anxiety. This study sought to determine whether or not temperament style, age, gender, or computer experience significantly affected computer anxiety as measured by Oetting's (1983) Computer Anxiety Scale (COMPAS).

Three research instruments were administered during this study: a demographic survey, the Myers-Briggs Type Indicator (MBTI), and the Computer Anxiety Scale (COMPAS). The Myers-Briggs Type Indicator (MBTI) was used to ascertain the student's MBTI preference and temperament styles were derived from these preferences. The Computer Anxiety Scale (COMPAS) was used to ascertain the student's general computer anxiety level.

Ninety-four (54.97%) of the respondents were female and 77 (45.03%) were male. Eleven (6.43%) of the respondents were 18 or younger, 116 (67.83%) 19 to 21, 33 (19.29%) 22 to 26, 9 (5.26%) 27 to 35, and 2 (1.19%) were 36 or older. Of the respondents, 153 (89.47%) had access to a computer at home, while 18 (10.53%) did not have the same computer access. Six (3.51%) of the respondents had less than one year of computer experience, 24 (14.04%) had one to two years, 53 (30.99%) had three to five years, and 88 (51.46%) had more than five years. Fifty-four (31.58%) of the respondents were Guardians, 22 (12.87%) Rationals, 41 (23.98%) Artisans, and 54 (31.57%) Idealists.

The average raw score as measured by the Computer Anxiety Scale (COMPAS) was 102 ($\underline{M} = 101.96$, $\underline{SD} = 29.59$)

The study found that no significant difference existed among age or temperament style and degrees of computer anxiety. The study did find a significant difference between computer experience and degrees of computer anxiety ($\underline{F} = 16.922$, $p < .001$). The study also found a significant difference between gender and degrees of computer anxiety ($\underline{F} = 4.376$, $p = .038$).

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CHAPTER I

INTRODUCTION

Background of the Study

Computers have made a significant impact on modern society. The incorporation of technology, specifically computers, has remained a relevant issue in our lives. Many experts have stated that society is currently experiencing a computer revolution. It has been estimated that over one-half of white-collar workers use computers in their daily work. The issue of incorporating technology into everyday life is present in both the educational and corporate environments. Therefore, computer competence is often a requirement for success in today's classroom and job market. This leaves those wanting to excel in the classroom and in the job market the responsibility of becoming proficient with computers. Such an emphasis on computer literacy places enormous pressure on individuals. Frequently this pressure leads to computer anxiety. Computer anxiety puts undue strain on the individual and on the learning process, not allowing students and workers to develop proficiency. This is one of the important negative aspects of the computer revolution.

Oetting (1983) defined computer anxiety as, "The anxiety that people feel they will experience when they are interacting with computers—the anxiety associated with the concept of computers" (p. 1). Oetting also defined computer anxiety as concept-specific rather than a state or trait anxiety. Previous researchers, such as Lazarus (1966) and

Spielberger (1966), separated anxiety into two constructs state anxiety and trait anxiety. Levitt (1967) differentiated the two by applying the adjectives acute and chronic. For Levitt, acute meant high intensity and relatively short duration, and chronic meant relatively low intensity and indefinite duration. Trait anxiety was a rather permanent condition based on the disposition and personality of the individual. State anxiety was a temporary condition precipitated by outside influences. "The two interpretations are quite different" (Levitt, p. 13). Oetting's delineation was introduced to fill the large gap between general trait anxiety and state anxiety. He believed computer anxiety did not fit either of Levitt's categories. Oetting defined concept-specific anxiety as anxiety experienced when dealing with a particular concept, such as computers. Other concept-specific anxieties might include social anxiety, speaking anxiety, or flying anxiety.

Computer anxiety affects individuals regardless of age, gender, intelligence, computer experience, cognitive styles, or personality types (Jones, 1994). With continuous upgrades of technology, mastery is a constant battle. Researchers such as Noked (as cited in Itzkovich, 1997) anticipated there would always be changes and revisions that make workers uneasy. Others warned that people must not assume that individuals would improve if people did not monitor change and take steps to minimize the negative effects of hurdles such as computer anxiety.

Computer anxiety has been manifested differently according to individual personalities and temperaments. "Many individuals respond enthusiastically and quickly

master the skills necessary for the effective application of computers” (Marcoulides, Mayes, & Wiseman, 1995, p 804) Other individuals are apprehensive when attempting to learn computer skills Feelings may range “from slight apprehension to almost paralyzing fear” (Martin, 1990, p 2) Shneiderman (1987) found that some people encountered serious cases of computer shock, terminal terror, or network neurosis that caused them to avoid using computers (as cited in Donnelly & Gorman, 1999) Such feelings of tension are defined as computer anxiety

The current study determined temperament styles and levels of computer anxiety in students taking an introductory computer course The investigator also gathered demographic data to analyze relationships The research literature that has investigated significant relationships between temperament styles and computer anxiety is limited This study built on that limited body of literature and could provide guidance to those attempting to reduce computer anxiety The question evoking this study was Are there significant relationships among temperament styles, age, gender and degrees of computer anxiety?

Statement of the Problem

There is no arguing that the use of computers has become an integral part of everyday life It is inevitable that computer technology will affect most individuals at some juncture People have seen increases in technology and computer use every day in society Unfortunately, computer anxiety often accompanies this increased use Some

research has claimed that computer anxiety has currently affected up to one-third of the country's population and that up to 5% are severe cases. Multiple studies (Kidd, 1973, Taylor, 1953) have shown an inverse correlation between anxiety and learning.

Because computer anxiety is a relatively new issue, there is a lack of research literature on the topic. Therefore, research on many variables could determine possible interventions to reduce computer anxiety. Researchers like Bellando and Winer (1985) stated, "There is a need to know which sections of the population or what type of individuals will be more likely to experience computer anxiety" (p. 12). Bellando and Winer also stated there was not a clear definition of computer anxiety, making it difficult to generalize results across studies.

Researchers like Maurer (1994) stated that an important question was, "What computer anxiety reduction techniques will work best for what kind of personality?" (p. 372). Knowing more about the relationship between computer anxiety, different temperaments, and demographic variables must be the first step in answering this question (Maurer, 1994).

Statement of the Purpose

The purpose of this study was to determine whether or not a relationship existed between students' temperament styles and their degree of computer anxiety. This study also sought to determine whether or not demographic variables such as age, gender, or computer experience affected degrees of computer anxiety. Specifically, this study

researched temperament styles and general computer anxiety of the population by administering the Myers-Briggs Type Indicator (MBTI) and the Computer Anxiety Scale (COMPAS) Statistical analysis on the reported data was used to determine whether significant relationships existed among the variables

This may be helpful information for future educators attempting to reduce students' computer anxiety An understanding and appreciation of students' characteristics and temperament styles may enable educators to determine and use strategies to create a learning environment that maximizes each student's capability to learn (McPherson, 1998, p 29)

Definition of Terms

The following terms, acronyms, and definitions are presented to assist readers of this study Each term has specific significance to this study

- 1 Anxiety – A feeling of apprehension or fear that frequently results in symptoms like tension, sweating, and behavioral actions
- 2 Computer Anxiety – Any negative reactions from individuals who feel threatened by personal interaction with computer technology
- 3 Computer Anxiety Scale (COMPAS) – An instrument designed to measure general computer anxiety, using a Likert-Scale for which respondents report their subjective feelings of anxiety
- 4 Concept-specific Anxiety – A third type of anxiety Oetting developed to fill the range between state and trait anxiety “Anxieties that people associate with a specific situation” (Oetting, 1983, p 1)
- 5 Myers-Briggs Type Indicator (MBTI) – An instrument designed to identify the personality preferences of an individual along four dichotomous indices The

MBTI classifies people, based on their self-reporting behavior, preferences, and value judgments

- 6 Personality Assessment – A process designed to categorize and measure personality traits involving collecting responses from, or making observations about, the subject which could be used to infer more general personality traits or status characteristics (Butcher, 1972)
- 7 Personality Typology – A system used by researchers to aid individuals learning of personality traits
- 8 Personality Type – A personality category that identifies a unique combination of psychological characteristics
- 9 State Anxiety – One of the popular delineations of anxiety A temporary condition brought on by outside influences A construct of anxiety with “high intensity and relatively short duration” (Levitt, 1967, p 13)
- 10 Trait Anxiety – One of the popular delineations of anxiety A rather permanent condition based on the disposition and personality of the individual A construct of anxiety with “relatively low intensity and indefinite duration” (Levitt, 1967, p 13)

Hypotheses

Based upon the reviewed literature, the current study proposed age, gender, and temperament style would have no significant effect in predicting degrees of computer anxiety Conversely, this study proposed computer experience would significantly affect degrees of computer anxiety The scope of this study was limited to observable, explicit, and unquestioned demographics such as age, gender, and computer experience When measuring temperament style and computer anxiety, the investigator used rigorously tested and internally consistent instruments in order to obtain dependable data This study did not address the complex and often impalpable construct of value involved in computer

experience Researchers believed that value of computer experience is impossible to accurately measure

The following hypotheses guided the study Each hypothesis was tested at the .05 level of significance

- Hypothesis 1 There is no significant difference between degrees of computer anxiety and gender among students in an introductory computer course
- Hypothesis 2 There is no significant difference between degrees of computer anxiety and age among students in an introductory computer course
- Hypothesis 3 There is no significant difference between degrees of computer anxiety as measured by the Keirsey Temperament Styles among students in an introductory computer course
- Hypothesis 4 There is a significant difference between degrees of computer anxiety and computer experience among students in an introductory computer course

Limitations

This study was designed to gather information from students in an Introductory Computer Science Course that included a broad spectrum of backgrounds and academic interests However, this population may not be representative of the entire population of students at The University of Tennessee, Knoxville The majority (67.83%) of this population was 19 to 21 years of age If the age distribution had consisted of a different age emphasis, results may have differed Researchers should exercise caution when generalizing results of this study to different populations with differing variables

The Myers-Briggs Type Indicator (Form M) and Oetting's Computer Anxiety Scale (COMPAS) have both been verified reliable, consistent, and accurate indicators of personality type and general computer anxiety. However, both instruments are self-report inventories that researchers see as somewhat subjective. Researchers such as Travers (1964) (as cited in McPherson, 1998) stated, "Self-ratings [have] come to be viewed in a rather different light as indicators, not of a personality as it actually is, but of a person's self concept" (p. 27). Another problem involved with self-report inventories is that of accurate responses. Personality scores are only valid to the degree that the respondent is honest and selects responses that truly characterize him or her (Gay, 1996, p. 154). Gay explained, "A common response set is the tendency of an individual to select the responses that he or she believes are the most socially acceptable" (p. 155). However, the investigator assured confidentiality of the student's identity and all answers to reduce the likelihood of any distortions in the data.

The Computer Anxiety Scale (COMPAS) was originally released and tested for reliability and validity in 1983. As stated above, the COMPAS scored high on accuracy, validity, and consistency. However, the current study was performed 17 years after the original testing of the COMPAS instrument. The ability of the COMPAS to still accurately measure general computer anxiety must be questioned. After carefully reviewing each of the items in the COMPAS, the investigator chose to administer the COMPAS because of the timelessness of the items.

CHAPTER II

REVIEW OF RELATED LITERATURE

General Anxiety

Anxiety has been defined as, “an abnormal and overwhelming sense of apprehension and or fear often marked by such physiological symptoms as tension, tremor, sweating, palpitation, and increased pulse rate” (*Webster’s Third New International Dictionary*, 1986) Freud (1936) defined anxiety as, “Something felt-a specific unpleasant emotional state or condition of the human organism that includes experiential, physiological, and behavioral components” (as cited in Spielberger, 1983) Other sources such as the *New Webster Dictionary of Practical Information* (1990) defined anxiety as, “Intense dread, apprehension” (p 17) Regardless of the definition, anxiety has been a problem for many people

Anxiety feelings range “from slight apprehension to almost paralyzing fear” (Martin, 1990, p 2) It has affected certain types of people more than others, manifesting itself in different ways and to different degrees (Cosby, 1991) Some individuals attribute feelings of anxiety to an individual’s perception of control Individuals who possess a feeling of control often experience little anxiety

Computer Anxiety

In one of the first studies conducted on the interaction of computers in the workplace, Calhoun (1981) found the introduction of computers caused job dissatisfaction

in many individuals. Accompanying job dissatisfaction was often computer anxiety. The definition of computer anxiety differs among researchers. Raub (1984) (as cited in Marcoulides, Mayes, & Wiseman, 1995) was one of the first to define computer anxiety as, "the complex emotional reactions that are evoked in individuals who interpret computers as personally threatening" (p. 804). Computer anxiety has also been described by Hunt (1996) as, "avoidance behaviour, wariness and failure to experiment with computers and negative remarks" (p. 6). Another widely used definition came from Howard, Murphy, and Thomas (as cited in Delveccio, 1995), who defined computer anxiety as, "The fear of impending interaction with a computer that is disproportionate to the actual threat presented by the computer" (p. 35). However defined, computer anxiety has posed a real threat to many individuals.

Many experts have stated that computer anxiety is a real problem (Rosen, Sears, & Weil, 1993; Marcoulides et al., 1995). Computer anxiety has been a legitimate phenomenon with complex origins. It has occurred in widely varying degrees among different individuals (Weinberg & English, 1983). Frequently, employers and educators have compounded the problem by not recognizing, "that computer anxiety is a stumbling block to the acquisition of skills and knowledge" (Hemby, 1998, p. 102). There has been much discussion on how many individuals suffer from computer anxiety and whether or not this phenomenon is increasing. One of the first studies to cite estimation was Weinberg and English's research. They estimated one-third of the population were

somewhat affected by computer anxiety (as cited in Gos, 1996) According to Loyd and Gressard (1984), one-fourth of the population is affected Between one-quarter and one-third of all people are believed to be somewhat computerphobic, and 1 in 20 have severe symptoms (Brosnan, 1998, Brosnan & Davidson, 1994) Recent research at Deakin University School of Management Information Systems found that as high as 1 in 10 young people suffered from computer anxiety Mr Alastair Anderson (as cited in Head, 1995) from Deakin University believed, "business needs to treat the condition seriously if it wants to reap all the productivity benefits of technology" (p 49) The only consensus on the number who suffer was that computer anxiety has been a real problem

Causes of Computer Anxiety

The causes of computer anxiety were innumerable and somewhat debated Applebaum and Primmer (1990) listed seven fears that typically caused computer anxiety, fear of (a) change, (b) losing status or power, (c) interacting with computers, (d) the impact of computers on society, (e) isolation, (f) failure, and (g) job displacement" (p 8) These were not the only views of the origins of computer anxiety Researchers such as Gos (1996) stated, "Computer anxiety is created, it is not a birth defect waiting to be healed" (p 274) "The reasons for computer anxiety range from feelings that the computer is in control of the user to fear of damaging the equipment" (Josten, 1992, p B05) Wurman (1989) attributed much of computer anxiety to a poor American educational system He stated that the U S educational system promoted the "It's not

your fault, it's the computer's" attitude. Others such as Jackson (1987) stated that computer anxiety often arose when a company implemented computer technology into the workplace without proper preparation and support. Many users compounded the anxiety by attempting to protect themselves through avoidance. Avoidance has often caused employees to fall behind, leading to inefficiency in the workplace. The anxiety partially defeated one of computer technology's largest assets. Students often pursued majors and careers that required little computing, even though they might have excelled in courses. As stated by Martin (1990), "Career choices based on fear, frustration, and anxiety can have major effects in our society long after the initial cause is no longer present" (p. 51). Another factor is that many anxious users tended not to ask for help because they were afraid of asking dumb questions (McCollum, 1998, p. A28).

Demographics

There is discussion among researchers regarding whether or not demographic variables affect computer anxiety. Previous studies (Cambre & Cook, 1987, Koohang, 1987, Loyd & Gressard, 1987) have examined the effects of demographic variables on degrees of computer anxiety. Many studies found significant relationships to age and gender while others found no differences. Cambre and Cook (1987) found males less anxious toward computers than females. The study also found a positive relationship between age and degree of computer anxiety. Loyd and Gressard (1987) found females were less anxious toward computers than males. This study examined a younger group of

individuals than had many similar studies. A previous study by Loyd and Gressard (1984) found males to be less anxious than females, but not to a significant degree. There were no significant age differences in either study. Other studies (Koohang, 1987, Oetting, 1983, Sievert, Albritton, Roper, & Clayton, 1988) also found no significant age or gender differences. "Oetting was convinced that females and males were equally involved in an increasingly computerized society" (McPherson, 1998, p. 24). Oetting created the Computer Anxiety Scale (COMPAS) based on this belief. Sievert et al. found that age and gender were not significantly related to computer anxiety, which contradicted much of what had been discovered with other samples (p. 250). Regardless of whether or not demographic variables were related to degree of computer anxiety, no one could argue that computer anxiety posed a real problem to computer users. Computer anxiety has also placed an enormous burden on educators to consider these restraints and to accommodate students by providing environments conducive to equal opportunity learning.

Cures for Computer Anxiety

Many have assumed that simple exposure to technology is enough to ensure the disappearance of computer anxiety (Anderson, 1996, McCollum, 1998, p. A28). This is a misconception. Users must have a sense of ease with the computer. This sense of ease has not always come with repetition and exposure. Many researchers claimed to have methods of easing computer anxiety. Cosby (1991) quoted Syracuse University Professor Kermith Harrington as saying

To soften the blow, companies should carefully consider the type of training employees receive. It is particularly helpful if employers allow their employees to choose the method by which they are trained, whether it is a classroom scenario or a self-paced tutorial program with little human interaction (p. D10)

Rakes (1989) claimed to have a recipe for successful training courses to alleviate computer anxiety: good learners, a good trainer, and a good learning environment (p. 25)

Brookfield (1986) offered the following recommendations for putting together a successful training course:

- 1 Know whether learners are motivated to learn
- 2 Use a learning format that allows for individual differences in ability and style
- 3 Make sure new learning builds on learners' current knowledge and attitudes
- 4 Reinforce learning
- 5 Allow student opportunities to practice what they are learning
- 6 Help learners to be active participants
- 7 Organize lesson into manageable units
- 8 Offer guidance in developing solutions
- 9 Show students how new skills and knowledge relate to what they already know
- 10 Make sure the material to be learned is meaningful to learners
- 11 Be precise and clear

- 12 Be animated, generate excitement, and use humor
- 13 Show concern for learners
- 14 Know thy subject
- 15 Relate theory to practice, and relate learners' field to other fields
- 16 Appear confident
- 17 Be open to different approaches
- 18 Present an authentic personality to the class
- 19 Be willing to go beyond class objectives
- 20 Create a good atmosphere for learning (pp 25-26)

A common theme in these methods has been a need for an atmosphere conducive to learning. Simply exposing individuals to computers has not guaranteed the reduction of computer anxiety. Marcoulides (1988) warned that simple exposure might even increase computer anxiety. Marcoulides placed a strong emphasis on the quality of the interaction.

Both in the workforce and in the classroom, computer anxiety may be costly. With the abundant use of computers, computer anxiety has been a burden. According to Tom (1987), over one-half of the white-collar workforce (about 35 million people) used computers in their daily work. United States estimates indicated that, "In the eighties, technophobia cost the economy \$4.2 billion a year, and even contributed to a loss of competitiveness" (Baker, 1998, p. 001). Hidden costs due to computer anxiety have been

abundant Many students choose career paths that place little emphasis on computers only find that it is virtually impossible to escape computers Attempting to evade computers often leaves people entering the workforce lacking the necessary skills to be successful

Personality Psychology

Personality psychology has been defined as, “The study of individual differences” (Brody, 1988, p 1) “There are many theories behind personalities, some extremely complex and some simple and clear, some old and new, each intending to explain how we develop our unique personalities and how we maintain them” (Corsini & Marsella, 1983, p 3) Most modern personality theories are adaptations of those of the original big three Sigmund Freud, Alfred Adler, and Carl Jung (Corsini & Marsella, 1983) These three personality theories are psychoanalysis, individual psychology, and analytical psychology

Sigmund Freud - Psychoanalysis

Sigmund Freud developed psychoanalysis, the oldest and most influential of all personality theories (Giovacchini, 1983, p 25) Giovacchini stated,

Psychoanalysis, a depth psychology, views the mind as an entity containing primitive and sophisticated elements, hierarchically ordered The primitive end of the spectrum has biologically based instincts (known as *id*) striving for expression against more structured reality-based elements (known as *ego*), which strive to make instinctual gratification consonant with internalized moral standards (known as *super-ego*) (p 25)

The id, the ego, and the superego were the three systems of personality in psychoanalysis Freud (as cited in Byrne, 1974) postulated, “Behavior was the result of

whatever compromises one worked out among one's primitive desires, the constraints of reality, and our acquired moral code" (p 37) Freud stated that in the beginning of one's life, there is only the id. The id is the demand for immediate satisfaction of one's bodily needs, also known as the pleasure principle (Byrne, p 37). Since individuals do not remain infants, some other kind of functioning must develop. "Freud proposed that, to survive, the individual must begin to come to terms with the objective world beyond himself" (Byrne, 1974, p 37). This is the stage of which the ego is developed. Byrne wrote this about the development of the last of Freud's systems, the superego:

When the parents are able to teach the child the traditional values of his society and when this moral code becomes internalized so that the child truly believes and genuinely feels the rightness of the values, the superego is said to have developed (p 38)

A more familiar term associated with the superego was conscience, the feeling of moral obligation to do the right thing (Byrne, 1974, p 38)

Freud (1936) believed that the key to an individual's personality was to be found in one's childhood experiences and in one's unconscious sexual conflict (Cloninger, 1996, p 155). Freud (as cited in Byrne, 1974) stated, "At times the pleasure-oriented aims of the id are in direct conflict with the morality-directed aims of the superego" (p 38). Freud believed this conflict caused uncontrollable, unconscious actions of abnormality. It was on the unconscious motivations that Freud focused much of his theoretical interpretations (Giovacchini, 1983, p 25). Later, it was Freud's description of unconscious functioning

that led other popular depth psychologists like Carl Jung far away (Byrne, 1974, p 45)

Carl Jung – Analytical Psychology

Carl Jung, a Swiss psychiatrist and colleague of Sigmund Freud, was one of the founding fathers of depth psychology. Jung has been one of the most recognized figures associated with the development of personalities. Jung founded analytical psychology in 1914 as a development from Freudian theory. Analytical psychology was “a major school of psychodynamic thought and clinical practice, seeks to understand the structure, psychodynamics, and unfolding of the human psyche” (Maduro & Wheelwright, 1983, p 125). Jung (1934/1954) stated personality was “the complete realization of our whole being” (p 172). Jung placed great importance on the total psyche, which he called the self (Maduro & Wheelwright, 1983). Jung was a depth psychologist and many peers found his theories difficult to interpret because of the complexity. Once interpreted, Jung’s theology had a great deal of practical utility. Jung (1934/1954) believed that “the complete realization of our whole being was an unattainable ideal (p 172). Jung (1934/1954) made this comparison, “Just as a child must develop in order to be educated, so the personality must begin to sprout before it can be trained (p 172). Jung (1934/1954) explained that vocation was what fired individuals to develop “the supreme realization of the innate idiosyncrasy of the living being” (p 171). He defined vocation, “An irrational factor that destines a man to emancipate himself from the herd and from its well-worn paths” (Jung, 1934/1954, p 175). “The original meaning of ‘to have a vocation’ was ‘to be addressed

by a voice” (Jung, 1934/1954, p 176) This inner voice was consistent within Jungian theology This was the largest difference between psychoanalysis and analytical psychology

Alfred Adler – Individual Psychology

As did Jung, Alfred Adler broke from Sigmund Freud in the early 1900s and developed his own personality theory Adler called his holistic view of personality Individual Psychology (Ansbacher, 1983, p 69) “Despite its name, individual psychology is a social psychology which considers the concept of an isolated human being to be a meaningless abstraction” (Ansbacher, 1983, p 69) Adler’s theory was postulated as another alternative to Freud’s theory Adler (as cited in Cloninger, 1996) also focused on childhood experiences and suggested that “early memories provide key insights to the unique personality of an individual and give direction to later striving toward goals” (p 319) However, many saw Adler as an optimist and Freud as a pessimist Hall and Lindzey (1957) stated, “Adler restored to man a sense of dignity and worth that psychoanalysis had pretty largely destroyed” (p 125) Adler Ansbacher (1983) stated, “Individual Psychology stressed consciousness and cognition, responsibility, meanings, and values (p 70) Ansbacher (1983) saw Adler’s psychology as teleological, “viewing man as pulled by the subjective future rather than pushed by the objective past, creatively striving for goals rather than reacting automatically to events” (p 69)

Definitions of Personality

Determining a clear and concise definition of personality is necessary when attempting to understand the formation and maintenance of personalities. Cattell (1950) explained, "Beginning study with a definition of what is to be studied is not always so scientifically honorable" (p. 2). He further explained that having a complete and agreed-upon definition of an object leaves nothing left to explore and study. Jung (1934/1954) explained, "The very idea of personality is, in common usage, so very vague and ill-defined that one hardly finds two people who take the word in the same sense" (p. 181). Every researcher seems to have a different definition of personality, leaving much research to be done. Cloninger (1996) defined personality as, "The psychological functioning of the individual process" (p. 1). Corsini (1983) stated this about a respected personality investigator:

Allport (1937), who collected no fewer than 50 definitions of personality, divided them into five types:

1. **Omnibus** Any definition that says 'sum total' is an omnibus definition.
2. **Arrangements** A second type of definition arranges personality traits in some orderly manner.
3. **Hierarchical** This kind of definition believes personality is structured in levels appearing in a fixed order.
4. **Adjustment** Another definition type views the individual as struggling to find his or her identity, trying to adjust to the world.

- 5 Distinctiveness This kind of definition stresses the individual's uniqueness (p 4)

Allport (1937) defined personality as, "The dynamic organization within the individual of those psychological systems that determine his unique adjustment to the world" (p 48) Other researchers such as Cattell (1950) defined personality as, "That which permits a prediction of what a person will do in a given situation" (p 2) The consensus is that no one is certain what determines personality

Determinants of Personality

Most researchers have agreed that a set of psychophysical systems determines an individual's personality but disagreed on the determining variables A popular model of determining personality has been the five-factor model (FFM) The FFM described personality along the dimensions of extraversion, neuroticism, conscientiousness, agreeableness, and openness to experience (Barrett & Pietromonaco, 1997, p 1173) The FFM model also provided a convenient method for summarizing personality judgments of the self and others Buss (1988) reported that a variety of processes accounted for the origin and maintenance of personalities but that all could be divided into four broad groups (a) inheritance, (b) interaction between person and environment, (c) development, and (d) differentiation (p 19) Allport (1937) suggested that the following list were the elements that made up an individual's personality (a) temperament, (b) trait, (c) character, (d) mood, (e) disposition, (f), trend, (g) habit, and (h) attitude (as cited in Corsini & Marsella, 1983) Again, the only consensus has been that no one researcher is certain

what determines an individual's personality Throughout the history of personality psychology, interpretation has played a large role in definitions, determinants, and theories of personality

Personality Typology and Assessment

Some research has claimed the first typology system came from ancient Greece where a number of scholars developed a theory based on temperament and the doctrine of humors (Miller, 1991) Other research stated oriental astrologers postulated the first typology system "They classified character in terms of four trigons, corresponding to the four elements " (Sharp, 1987, p 11)

The modern study of personality types became popular in the early 20th century Of the many models of personality typology used today, none has been as popular as the 1920s model published by Carl Jung (1923) Jung developed a personality typology so popular that many do not remember any of his other works, perhaps because of the practical utility of his theoretical concepts (Salter, Evans, & Forney, 1997) Jung's typology grew from his extensive historical review of literature, mythology, aesthetics, philosophy, and psychopathology (Sharp, 1987) Jung (1971) called this typology the psychology of individuation Jung observed that human behavior was not random Rather it follows identifiable patterns that develop from the structure of the human mind (Association for Psychological Type (APT), 1999) Jung's basic focus was on the introvert-extrovert dimension Jung ranked people according to personality preferences

thinking, feeling, sensing, and intuiting. He believed one of these four functions tends to dominate. As Sharp (1987) stated

Jung differentiates eight typological groups: two personality attitudes-introversion and extraversion-and four functions or modes of orientation-thinking, sensation, intuition and feeling-each of which may operate in an introverted or extraverted way (p. 12)

Jung (as cited in Churchill & Bayne, 1998) believed the interactions between the preferences consist mainly of the sixteen types formed from all combinations of the preferences, but also several other sub-types. In addition, there are other levels of the theory, particularly type dynamics.

Many psychologists and researchers have developed personality assessments based on theories of the classical psychologists like Jung. Personality assessment was applicable to many practical settings, including academic advising, career counseling, and leadership (Johnson, Johnson, Murphy, Weiss, & Zimmerman, 1998). McCrae, Costa, and Moore (1989) stated that many companies used personality assessment in their management development programs, "Where the focus is on improving decision making and building effective teamwork." (as cited in Johnson et al., 1998, p. 821). Yet psychologists like Daniel Druckman (as cited in Argetsinger, 1999) cautioned that, "It would be dangerous to base administrative decisions on results of the tests" (p. B01).

Personality assessment instruments may enable researchers to predict the future course of action of specified individuals. They may also enable researchers to make

predictions about his/her unique future behavior (Lanyon & Goodstein, 1982) These are a few of the reasons that personality assessments are useful to researchers, psychologists, and industry alike

Myers-Briggs Type Indicator

The MBTI is the third most frequently used test among counseling professionals (Johnson et al , 1998) More than three million MBTIs are administered each year in the U S , and the instrument has been translated into more than two dozen languages (APT, 1999) Isabel Briggs Myers and her mother Katharine Cook Briggs developed the MBTI in the early 1950s An anonymous author (1997) stated

Myers and Briggs developed the instrument during World War II on the hypothesis that an understanding of personality preferences might aid those civilians who were entering the workforce for the first time to find the right job for the war effort (p 114)

The basis of this instrument was the Jungian theory of typology Like Jung's model of typology, the MBTI divided personality preferences into eight typological groups "The MBTI uses four different pairs of attributes to create a matrix of 16 personality types" (Anonymous, 1997, p 114) The Extraversion/Introversion and Judging/Perceiving scales are the attitude scales These differ from the function scales of Sensing/Intuition and Thinking/Feeling that relate to mental activity and processes that affect how individuals acquire information and make decisions (Stansbury, & Coll, 1998) "In the Myers-Briggs worldview, there is no right or wrong type Every type has its strength" (as cited in

Argetsinger, 1999, p B05) Personality types are often used as a way of putting people into boxes or stereotyping. The proper way is to view personality theory as a language to talk about similarities and differences between people (Keirsey & Bates, 1984). When used properly, personality assessment is effective in providing useful information for better self-understanding.

Maurer (1994) (as cited in McPherson, 1998) stated, "Various personality traits have been compared to computer anxiety. This is a small group of studies, but they are potentially important because they could give important information to those who are attempting to understand or reduce computer anxiety" (p. 23).

Temperament Theory

Many researchers have agreed that Diamond's *Personality and Temperament* (1957), was the first book in the modern era to discuss temperament (Buss & Plomin, 1984, p. 1). According to Diamond (1957), temperament theory should have focused more on the constitutional origins of personality (as cited in Buss & Plomin, 1984). "The foundations would not be restricted to humans, for 'The human being, whatever else he may be, is first of all an animal, and must be understood as such' (p. 4)" (p. 1). Many of Diamond's contributions were dismissed because of the rejection in the U.S. of the concept of innate primitive tendencies in human personality. However, Diamond described four temperaments he thought were shared by all primates: fearfulness, aggressiveness, affiliativeness, and impulsiveness.

One of the first and most widely used definitions of temperament was by Allport (1961)

Temperament refers to the characteristic phenomena of an individual's emotional nature, including his susceptibility to emotional stimulation, his customary strength and speed of response, the quality of his prevailing mood, and all the peculiarities of fluctuation and intensity of mood, these phenomena being regarded as dependent upon constitutional make-up and therefore largely hereditary in origin (p 34)

This definition was sufficiently broad to support views of temperament as emotional in nature or as originating constitutionally or genetically (Buss & Plomin, 1984, p 3) The above definition may have supported all the temperament theories except the nontemperament theory The nontemperament theory assumed, "Each person starts life as a blank slate (tabula rasa) that will be written on by experience" (Buss & Plomin, 1981, pp 1-2)

Keirsey and Bates (1984) developed one of the more popular temperament theories The theory synthesized theoretical ideas from several classical psychologists Keirsey and Bates defined temperament as

Temperament can denote a moderation or unification of otherwise disparate forces, a tempering or concession of opposing influences, an overall coloration or tuning, a kind of thematization of the whole, a uniformity of the diverse One's temperament is that which places a signature or thumbprint on each of one's actions, making it recognizably one's own (p 27)

Keirsey and Bates stated, "Temperament determines behavior because behavior is the instrument for getting us what we must have, satisfying our desire for that one thing we

live for” (p 30)

Keirsey Temperament Styles

Keirsey and Bates (1984) attempted to synthesize the useful theoretical contributions of Jung, Kretschmer, Freud, Adler, Sullivan, and Maslow, recognizing the insight of each while keeping each from obliterating the other (p 27) Keirsey and Bates believed a culmination of all the great theologians had merit as a temperament theory Regarding the definition of temperament, Keirsey and Bates asked

What is meant, first of all, by temperament? This question is not as naive as it sounds, for American psychology has rarely considered the idea and so is in no position to define it or pronounce its uses Temperament can denote a moderation or unification of otherwise disparate forces, a tempering or concession of opposing influences, an overall coloration or tuning, a kind of thematization of the whole, a uniformity of the diverse (p 27)

The original theory of temperament styles stemmed from Hippocrates’ writings The original four temperaments were called Sanguine, Choleric, Phlegmatic, and Melancholic Hippocrates derived the names from four body fluids blood, phlegm, yellow bile, and black bile Keirsey and Bates stated, “On the other hand, four Greek Gods, all of whom Zeus commissioned to make man more like the gods, represent the temperaments quite accurately, albeit metaphorically These are Apollo, Dionysus, Prometheus, and his brother Epimetheus” (p 29) Keirsey and Bates explained that each temperament was different in fundamental ways (p 29) Keirseyian typology was a holistic systems theory approach to the concept of personality “It is organized and

functions as a whole forming an identifiable pattern or relationship" (Golay, 1982, p 4)

Similarities among the 16 personality types portrayed in the Myers-Briggs Type Indicator (MBTI) made it convenient and useful to partition like types into four groups Keirsey and Bates (1984) named these four groups Dionysian (Artisans), Epimethean (Guardian), Promethean (Rationals), and Apollonian (Idealists) Figure 1 illustrates where each of the Myers-Briggs (MBTI) personality types fit into Keirsey's temperament theory

<p style="text-align: center;">Artisan <u>Dionysian Temperament</u> Entertainer Operator ISFP ISTP ESFP ESTP</p>	<p style="text-align: center;">Guardian <u>Epimethean Temperament</u> Administrator Conservator ISTJ ISFJ ESTJ ESFJ</p>
<p style="text-align: center;">Rational <u>Promethean Temperament</u> Engineer Coordinator INTP INTJ ENTP ENTJ</p>	<p style="text-align: center;">Idealist <u>Apollonian Temperament</u> Mentor Advocate INFJ INFP ENFJ ENFP</p>

Figure 1 Relationship of Keirsey's Temperament Styles to the Myers-Briggs Personality Types

Dionysian Temperament – The SPs

Keirsey and Bates (1984) included the following Jungian personality types in the Dionysian temperament style ISTP, ESTP, ISFP, and ESFP It is estimated that approximately 38% of the population are Dionysians, roughly 80,000,000 people in the United States (Keirsey & Bates, 1984). Keirsey and Bates described the Dionysians, or SPs, as free spirits. Dionysians were impulsive and refuse to be confined or obligated

“More than the other temperaments the SP is subject to what Karl Buhler calls ‘function lust’. a hunger for action without fetter or constraint, an exploratory action without the necessity for rules or practice” (Keirsey & Bates, 1984, p 32)

Epimethean Temperament – The SJs

Keirsey and Bates (1984) included the following Jungian personality types in the Epimethean temperament style ISFJ, ESFJ, ISTJ, and ESTJ Epimetheans are also estimated to comprise approximately 38% of the population (Keirsey & Bates, 1984) Keirsey and Bates described the SJs as pessimistic, detecting a theme of pessimism coloring all his deeds (p 41) “Teaching, preaching, accounting, banking, clerking, medicating, rehabilitating, securing, insuring, managing, selling (providing) – note in all of these a single strand of desire to conserve” (Keirsey & Bates, 1984, p 41) The Epimethean has been called the true stabilizer of the social and economic world

Promethean Temperament – The NTs

Keirsey and Bates (1984) included the following Jungian personality types in the Promethean temperament style INTP, ENTP, INTJ, and ENTJ It is estimated that approximately 12% of the population are Prometheans, only about 24,000,000 people in the United States (Keirsey & Bates, 1984) Keirsey and Bates described the NTs as having an urgent desire to be competent, “He can be obsessed by it and feel a compulsion to improve, as if caught in a force field” (p 48) The Promethean has been labeled as the most self-critical of all the temperament styles “Constant self-doubting is the lot of the

NT Because of these doubts, the NT, particularly the NTP, may have difficulty in taking action. He can be so immobilized by self-doubts that his resolution fades” (Keirsey & Bates, p. 50). Keirsey and Bates warned, “An unfortunate by-product of these two messages sent by the NT is that those around him come to feel intellectually inadequate” (p. 51).

Apollonian Temperament – The NFs

Keirsey and Bates (1984) included the following Jungian personality types in the Apollonian temperament style: INFJ, ENFJ, INFP, and ENFP. The remaining 12% of the population estimated to be Apollonians (Keirsey & Bates, 1984). Keirsey and Bates described the Apollonians as, “Always becoming himself, the NF can never truly be himself, since the very act of reaching for the self immediately puts it out of reach” (pp. 58-59). Hamlet (as cited in Keirsey & Bates, 1984) dealt with many of the same problems:

To be or not to be, that is the question. Whether it be nobler in the heart to suffer the slings and arrows of outrageous fortune or to take up arms against a sea of troubles and by opposing end them: an enterprise of great pith and moment with this regard their currents turn awry and lose the name of action. (p. 59)

Keirsey and Bates also described the Apollonian as having an amazing capability to appear to his beholder whatever the beholder wanted to see, and seldom relieving the beholder of the illusion (p. 63).

CHAPTER III

METHODS and PROCEDURES

Design

The current study was designed to determine whether or not certain personality characteristics or demographics significantly affected an individual's degree of computer anxiety. Specifically, this study sought to determine whether or not temperament style, age, gender, or computer experience significantly affected computer anxiety among students as measured by Oetting's (1983) Computer Anxiety Scale (COMPAS). This study used three research tools to collect data for analysis.

Subjects

The research population for this study was all undergraduate students enrolled in the non-major introductory computer course offered by the Computer Science Department at The University of Tennessee, Knoxville. However, several Computer Science students were allowed to enroll in the course. The course included basic concepts of computer hardware and software, microcomputer systems, networking, and the interdisciplinary science of computing. The total population was 240 students. Enrollment in this course included students from a broad spectrum of backgrounds and academic interests.

Instrumentation

Analysis of similar studies allowed the investigator to effectively select research instruments that would accurately measure the variables hypothesized in this study.

Demographic Survey

The first research tool was a brief demographic survey developed by the investigator. Input from the course instructor guided the survey design. Results from the survey provided the subject's age, gender, major, amount of computer experience, and whether or not the subject owned a computer. Appendix B contains a copy of the demographic survey administered during the study.

Myers-Briggs Type Indicator

The second research instrument was the latest form of the Myers-Briggs Type Indicator (Form M). The MBTI was used to determine the personality type of each of the subjects. Keirseyian temperament theory was used to link personality types and to ascertain the subject's temperament style.

The MBTI is a forced-choice form of test based on Carl Jung's 1920s typology. Each item has one answer weighted in favor of the opposing preference. To determine each subject's type, the researcher gathered a point total for each preference, yielding eight scores. These eight scores were interpreted as four pairs of scores, with the larger of each pair indicating the subject's type. Several researchers have used the MBTI and have found it a reliable instrument to determine personality type. Previous research (Carlyn, 1977, Myers & McCaulley, 1985, Sundberg, 1978, Thompson & Borello, 1986) has indicated that the MBTI's reliability is consistent over time. In different reliability tests, the MBTI has shown between a .71 and .89 Cronbach alpha coefficient for scale.

consistency and a .75 test-retest reliability coefficient for all scales after 14 months

The researcher ordered the MBTI Form M booklets and template scoring sheets from Consulting Psychologists Press, Inc. in Palo Alto, CA after sending verification of appropriate professional qualifications. Appendix E contains the MBTI Qualification Form for Consulting Psychologists Press, Inc.

Computer Anxiety Scale (COMPAS)

The third research instrument administered in this study was Oetting's (1983) Computer Anxiety Scale (COMPAS). Oetting's scale consisted of 48 items. Each item described a situation in which the individual encountered and interacted with computers. The instrument asked the subjects to rate their feelings of anxiety, using a Likert-type scale, from strong positive feelings to strong negative feelings. The subject's raw score could range between 40 and 200. The higher the subject's scores, the higher the anxiety level. Oetting also offered four profiles, or groups, into which subjects could be categorized: 40-119 generally relaxed, 120-139 some mild anxiety present, 140-159 anxious tense, and 160+ very anxious. The COMPAS was tested for internal consistency on a group of 435 entering college freshmen, yielding a Cronbach alpha coefficient of .96.

Oetting's (1983) Computer Anxiety Scale (COMPAS) also included seven subscales: (a) hand calculator, (b) trust, (c) general attitude, (d) data entry, (e) word processing, (f) business operations, and (g) computer science. These subscales can be used to determine specific areas that could be related to computer anxiety.

Data Collection

Data for the analysis was obtained using three research instruments. Participation was voluntary and encouraged by explaining to the students that their individual results would be determined and made available to them (<http://web.utk.edu/~utbowl>) to facilitate personal awareness and direction. Each student received a packet that included a cover letter, the demographic survey, and each of the other research instruments. The cover letter explained the purpose of the study, encouraged participation, and assured confidentiality of the student's identity and of all responses. The appendices contain the cover letter, the permission letter to reproduce and use Oetting's Computer Anxiety Scale (COMPAS), a copy of Oetting's Computer Anxiety Scale (COMPAS), and the Qualification Form from Consulting Psychologists Press, Inc. A copy of the Myers-Briggs Type Indicator (Form M) was not included for copyright reasons.

The computer course used for this survey had two sections: a lecture and lab. The course's entire population met during the lecture section and were divided into smaller groups for the lab section. Unlike the lecture section, the labs had a mandatory attendance policy. To obtain a higher response rate, data was gathered during the lab section of the course. Data from each lab was gathered during the same session of the course to ensure that each student had had equal exposure to the course.

Data Analysis

In the analysis of all data generated by the administration of the three research instruments was conducted, first using primary descriptive statistics and secondary inferential statistics. The descriptive statistics were used to obtain a better understanding of the population and to summarize the data for interpretation. Inferential statistics were used to make inferences about the population. The procedures and statistical tests used to describe and make inferences about the population are described in the findings section. All of the statistical tests were run using SPSS 9.0 for Windows and JMP version 3.2.5 for Windows.

Computer anxiety was treated as the dependent variable throughout the statistical testing. Oetting's Computer Anxiety Scale (COMPAS) yields a raw score between 40 and 200. Oetting (1983) also offered four profiles or groups in which subjects could be categorized. Statistical testing was performed utilizing the dependent variable of computer anxiety as both categorical and continuous (raw) scores.

Hypotheses

For statistical treatment of the hypotheses, the continuous (raw) scores were used. Univariate Analysis of Variance (ANOVA) tests were performed on the data to determine relationships and significance among the variables. ANOVA is a statistical procedure used for assessing the statistical significance of the relationship between categorical independent variables and a continuous dependent variable.

CHAPTER IV

FINDINGS

Respondents

The total population was 240 students. Students totaling 214 (89%) attended the class sessions in which the research took place. Of these students, 171 completed the research instruments. This yielded a 71.25% response rate of the total population. Of the 214 students with an opportunity to participate, there was a 79.91% response rate.

As noted in table 1, 94 (54.97%) of the respondents were females and 77 (45.03%) were males. Eleven (6.43%) of the respondents were 18 or younger, 116 (67.83%) 19 to 21, 33 (19.29%) 22 to 26, 9 (5.26%) 27 to 35, and 2 (1.19%) were 36 or older.

Of the respondents, 153 (89.47%) had access to a computer at home, while 18 (10.53%) did not have the same computer access. Six (3.51%) of the respondents had less than one year of computer experience, 24 (14.04%) had one to two years, 53 (30.99%) had three to five years, and 88 (51.46%) had more than five years. Of the respondents, 24 (14.04%) were in the Pre-Professional Program, 23 (13.45%) in Broadcasting, 22 (12.87%) in Exercise Science, 21 (12.28%) were Undecided, 14 (8.19%) in Communications, 10 (5.85%) in Computer Science, 9 (5.26%) in Business, 9 (5.26%) in Psychology, 6 (3.51%) in Human Services, 6 (3.51%) in Human Resource Development, and 27 (15.78%) were in other majors.

Table 1 Demographics of Respondents

Category	N	Percentage
Sex		
Female	94	54.97
Male	77	45.03
Age		
18 or younger	11	6.43
19 to 21	116	67.83
22 to 26	33	19.29
27 to 35	9	5.26
36 or older	2	1.19
Access to Computer		
Yes	153	89.47
No	18	10.53
Computer Experience		
Less than one year	6	3.51
One to two years	24	14.04
Three to five years	53	30.99
More than 5 years	88	51.46
Major		
Pre-Professional	24	14.04
Broadcasting	23	13.45
Exercise Science	22	12.87
Undecided	21	12.28
Communications	14	8.19
Computer Science	10	5.85
Business	9	5.26
Psychology	9	5.26
Human Services	6	3.51
Human Resource Development	6	3.51
Other	27	15.78

When measuring general computer anxiety the following scale is offered by Oetting (1983) to compute overall computer anxiety 40-119 generally relaxed, 120-139 some mild anxiety present, 140-159 anxious tense, and 160+ very anxious Figure 2 illustrates the categorical anxiety levels

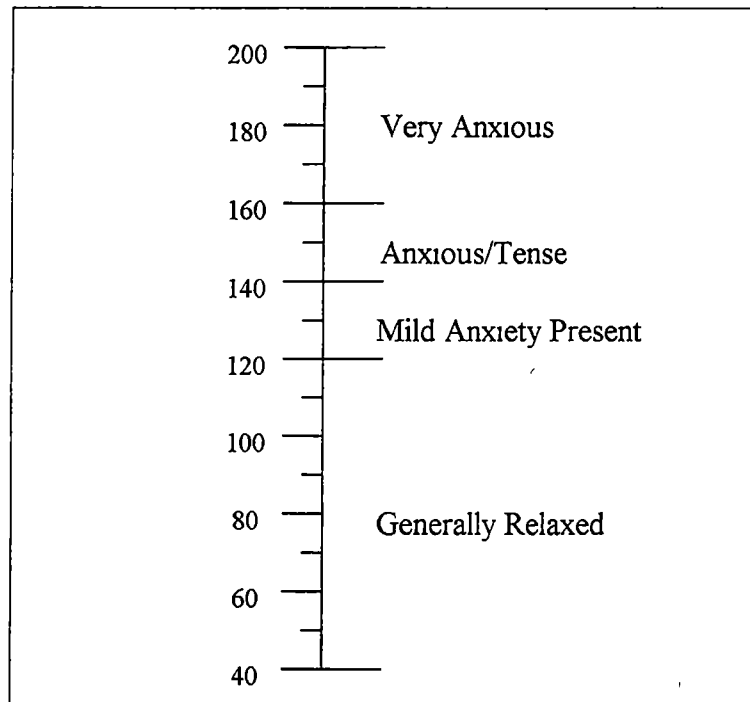


Figure 2 Oetting's categorical anxiety groups

Of the 171 respondents, 120 (70.18%) were Generally Relaxed, 36 (21.05%) Mildly Anxious, 12 (7.01%) Anxious/Tense, and 3 (1.75%) were Very Anxious. The average raw score as measured by the Computer Anxiety Scale (COMPAS) was 102 ($M = 101.96$, $SD = 29.59$).

Table 2 reflects the frequencies of the Myers-Briggs Type Indicator (MBTI) types

Table 2 Frequencies of the Myers-Briggs Type Indicator

Personality Type	Number of Respondents	Percent of Respondents
ISTJ	11	6.43
ISFJ	10	5.85
ESTP	9	5.26
ESFP	22	12.86
INTJ	9	5.26
INFJ	1	0.58
ENTP	6	3.51
ENFP	34	19.88
ISTP	0	0.00
INTP	4	2.34
ESTJ	12	7.02
ENTJ	3	1.77
ISFP	11	6.43
INFP	8	4.68
ESFJ	21	12.28
ENFJ	10	5.85
	171	100.00

found among the respondents. Similarities among the 16 personality types identified by the Myers-Briggs Type Indicator (MBTI) found it convenient and useful to partition like types into four groups. Keirsey and Bates (1984) named these four groups: Guardians, Rationals, Artisans, and Idealists. Fifty-four (31.58%) of the respondents were Guardians, 22 (12.87%) Rationals, 41 (23.98%) Artisans, and 54 (31.57%) Idealists. Tables 3 to 7 display the descriptive statistics on each of Keirsey's Temperament Styles.

Table 3 Frequencies of Temperament Styles

Temperament Style	N	Percentage
Guardian	54	31.58
Rational	22	12.87
Artisan	41	23.98
Idealist	54	31.58
Total	171	100

Table 4 Gender of Temperament Styles

Temperament Style	Male	Percentage	Female	Percentage
Guardian	24	14.04	30	17.54
Rational	15	8.77	7	4.09
Artisan	15	8.77	26	15.21
Idealist	23	13.45	31	18.13
Total	77	45.03	94	54.97

Table 5 COMPAS Scores of Temperament Styles According to Gender and Computer Anxiety

Temperament	Gender	Mean	Standard Deviation	N
Guardian	Male	90 54	23 70	24
	Female	106 83	28 45	30
	Total	99 59	27 45	54
Rational	Male	92 13	26 99	15
	Female	86 71	25 88	7
	Total	90 41	26 15	22
Artisan	Male	103 07	37 05	15
	Female	111 69	29 31	26
	Total	108 24	32 17	41
Idealist	Male	102 22	32 78	23
	Female	105 39	28 39	31
	Total	104 04	30 08	54
Total	Male	96 78	30 02	77
	Female	106 20	28 70	94
	Total	101 96	29 59	171

Table 6 COMPAS Scores of Temperament Styles According to Age and Computer Anxiety

Temperament	Age	Mean	Standard Deviation	N
Guardian	< 18	69 00	15 56	2
	19 - 21	100 00	28 37	42
	22 - 26	103 44	23 95	9
	27 - 35	109 00		1
	Total	99 59	27 45	54
Rational	< 18	111 00		1
	19 - 21	94 85	30 24	13
	22 - 26	80 63	16 64	8
	Total	90 41	26 15	22
Artisan	< 18	78 67	24 37	3
	19 - 21	111 93	33 62	30
	22 - 26	120 00	21 07	6
	27 - 35	69 00	29 52	1
	36 +	67 00		1
	Total	108 54	30 08	41
Idealist	< 18	115 80	24 37	5
	19 - 21	99 58	33 62	31
	22 - 26	114 00	21 07	10
	27 - 25	102 86	29 52	7
	36 +	92 00		1
	Total	104 04	30 08	54
Total	< 18	96 73	29 67	11
	19 - 21	102 40	29 97	116
	22 - 26	104 12	29 92	33
	27 - 35	99 78	28 12	9
	36 +	79 50	17 68	2
	Total	101 96	29 59	171

Table 7 COMPAS Scores of Temperament Styles According to Computer Experience and Computer Anxiety

Temperament	Experience	Mean	Standard Deviation	N
Guardian	0 - 5 years	112 77	22 61	22
	> 5 years	90 53	27 09	32
	Total	99 59	27 45	54
Rational	0 - 5 years	107 00	25 85	10
	> 5 years	76 58	17 30	12
	Total	90 41	26 15	22
Artisan	0 - 5 years	117 40	30 98	25
	> 5 years	76 58	29 82	16
	Total	90 41	32 17	41
Idealist	0 - 5 years	111 23	32 47	26
	> 5 years	97 36	26 52	28
	Total	104 04	30 08	54
Total	0 - 5 years	112 99	28 60	83
	> 5 years	91 56	26 74	88
	Total	101 96	29 59	171

Hypotheses

Each of the four hypotheses were tested using a Univariate Analysis of Variance (ANOVA) For each of the hypotheses, the subject's continuous (raw) score was the dependent variable

Hypothesis 1

There is no significant difference between degrees of computer anxiety and gender among students in an introductory computer course Table 8 contains the total number (N), means (M), and standard deviations (SD) of each gender The subject's gender was viewed as the independent variable Raw computer anxiety scores were taken as the dependent variable Table 9 contains the Univariate ANOVA results for gender and computer anxiety The ANOVA yielded a test statistic of $F = 4.376$, with a p value of .038 Therefore, gender was found to have a significant effect on the degree of computer anxiety as measured by Oetting's Computer Anxiety Scale (COMPAS) The null hypothesis was rejected

Table 8 Descriptive Statistics for Gender and Computer Anxiety

Gender	Mean	Standard Deviation	N
Male	96.78	30.02	77
Female	106.20	28.70	94
Total	101.96	29.59	171

Table 9 ANOVA Results for Gender and Computer Anxiety

Source	Type III Sum of Squares	df	Mean Square	F	Significance
Corrected Model	3758 307 ^a	1	3758 307	4 376	038
Intercept	1743953	1	1743953	2030 753	< 001
GENDER	3758 307	1	3758 307	4 376	038
Error	145132 4	169	4 376		
Total	1926547	171			
Corrected Total	148890 7	170			

^a R Squared = 025 (Adjusted R Squared = 019)

As previously stated, Oetting (1983) offered four categories for grouping computer anxiety scores. To further analyze the relationship to gender, a chi-square analysis was performed on the categorical data to compare frequencies observed against frequencies expected. The Univariate ANOVA was used for statistical treatment of the hypotheses to provide a higher level of accuracy when testing significance among variables. However, the possibility of providing further insight into the relationships among variables justified testing the categorical data. Table 10 contains the chi-square results for gender and computer anxiety. The chi-square yielded a test statistic of

Table 10 Chi-Square Results for Gender and Computer Anxiety

	Value	df	Significance (2-sided)
Pearson Chi-Square	5.182 ^a	3	.159
Likelihood Ratio	5.440	3	.142
Linear-by-Linear Association	2.230	1	.135
N of Valid Cases	171		

^a 2 cells (25.0%) have expected count less than 5. The minimum expected count is 1.35.

$\chi^2 = 5.182$, with a p value of .159. Therefore, gender was found to have no significant effect on the degree of computer anxiety when tested as categorical data.

Hypothesis 2

There is no significant difference between degrees of computer anxiety and age among students in an introductory computer course. Table 11 contains the total number (N), means (M), and standard deviations (SD) of each age group. The subject's age was

Table 11 Descriptive Statistics for Age and Computer Anxiety

Age	Mean	Standard Deviation	N
18 or younger	96.73	29.67	11
19-21	102.40	29.97	116
22-26	104.12	29.92	33
27-35	99.78	28.12	9
36 or older	79.50	17.68	2
Total	101.96	29.59	171

viewed as the independent variable. Raw computer anxiety scores were taken as the dependent variable. Table 12 contains the Univariate ANOVA results for age and computer anxiety. The ANOVA yielded a test statistic of $F = 431$, with a p value of .786. Therefore, age was found to have no significant effect on the degree of computer anxiety as measured by Oetting's Computer Anxiety Scale (COMPAS). The null hypothesis was not rejected.

In an attempt to provide further insight into the relationship between the variables, the categorical data was used to perform a chi-square test. Table 13 contains the chi-square results for age and computer anxiety. The chi-square yielded a test statistic of $\chi^2 = 2.363$, with a p value of .999. Therefore, age was found to have no significant effect on the degree of computer anxiety when tested as categorical data.

Table 12 ANOVA Results for Age and Computer Anxiety

Source	Type III Sum of Squares	df	Mean Square	F	Significance
Corrected Model	1529 202 ^a	4	382 301	431	786
Intercept	314232 0	1	314232 0	353 976	< 001
AGE	1529 202	4	382 301	431	786
Error	147361 5	166	887 720		
Total	1926547	171			
Corrected Total	148890 7	170			

^a R Squared = 010 (Adjusted R Squared = 014)

Table 13 Chi-Square Results for Age and Computer Anxiety

	Value	df	Significance (2-sided)
Pearson Chi-Square	2 363 ^a	12	.999
Likelihood Ratio	3 297	12	.993
Linear-by-Linear Association	218	1	.641
N of Valid Cases	171		

^a 13 cells (65.0%) have expected count less than 5. The minimum expected count is .04.

Hypothesis 3

There is no significant difference between degrees of computer anxiety as measured by the Keirsey Temperament Styles among students in an introductory computer course. Table 14 contains the total number (N), means (M), and standard deviations (SD) of each temperament style. The subject's temperament style was viewed as the independent variable. Raw computer anxiety scores were taken as the dependent variable.

Table 14 Descriptive Statistics for Keirsey's Temperament Style and Computer Anxiety

Temperament Style	Mean	Standard Deviation	N
Guardian	99.59	27.45	54
Rational	90.41	26.15	22
Artisan	108.54	32.17	41
Idealist	104.04	30.08	54
Total	101.96	29.59	171

Table 15 contains the Univariate ANOVA results for temperament style and computer anxiety. The ANOVA yielded a test statistic of $F = 2.032$, with a p value of .111. Therefore, temperament style was found to have no significant effect on the degree of computer anxiety as measured by Oetting's Computer Anxiety Scale (COMPAS). The null hypothesis was not rejected.

In an attempt to provide further insight into the relationship between the variables, the categorical data was used to perform a chi-square test. Table 16 contains the chi-square results for temperament style and computer anxiety. The chi-square yielded a test statistic of $\chi^2 = 13.243$, with a p value of .152. Therefore, temperament style was found to have no significant effect on the degree of computer anxiety when tested as categorical data.

Hypothesis 4

There is no significant difference between degrees of computer anxiety and computer experience among students in an introductory computer course. Table 17 contains the total number (N), means (M), and standard deviations (SD) of each computer experience level. The subject's experience level was viewed as the independent variable. Raw computer anxiety scores were taken as the dependent variable. Table 18 contains the Univariate ANOVA results for computer experience and computer anxiety. The ANOVA yielded a test statistic of $F = 16.922$, with a p value of $< .001$. Therefore, computer experience was found to have a significant effect on the degree of computer anxiety as

Table 15 ANOVA Results for Keirsey's Temperament Style and Computer Anxiety

Source	Type III Sum of Squares	df	Mean Square	F	Significance
Corrected Model	5244 237 ^a	3	1748 079	2 032	111
Intercept	1516318	1	1516318	1762 836	< 001
TEMPERAMENT	5244 237	3	1748 079	2 032	111
Error	143646 5	167	860 159		
Total	1926547	171			
Corrected Total	148890 7	170			

^a R Squared = 035 (Adjusted R Squared = 018)

Table 16 Chi-Square Results for Keirsey's Temperament Style and Computer Anxiety

	Value	df	Significance (2-sided)
Pearson Chi-Square	13.243 ^a	9	.152
Likelihood Ratio	14.570	9	.103
N of Valid Cases	171		

^a 9 cells (56.3%) have expected count less than 5. The minimum expected count is .39.

Table 17 Descriptive Statistics for Computer Experience and Computer Anxiety

Experience	Mean	Standard Deviation	N
< 1 year	157.67	22.39	6
1 – 2 years	117.42	19.07	24
3 – 5 years	105.92	28.12	53
> 5 years	91.56	26.74	88
Total	101.96	29.59	171

Table 18 ANOVA Results for Computer Experience and Computer Anxiety

Source	Type III Sum of Squares	df	Mean Square	F	Significance
Corrected Model	34710 133 ^a	3	11570 044	16 922	< 001
Intercept	936086 5	1	936086 5	1369 116	< 001
EXPERIENCE	34710 133	3	11570 044	16 922	< 001
Error	114180 6	167	683 716		
Total	1926547	171			
Corrected Total	148890 7	170			

^a R Squared = 233 (Adjusted R Squared = 219)

measured by Oetting's Computer Anxiety Scale (COMPAS) The null hypothesis was not rejected

In an attempt to provide further insight into the relationship between the variables, the categorical data was used to perform a chi-square test Table 19 contains the chi-square results for computer experience and computer anxiety The chi-square yielded a test statistic of $\chi^2 = 63.038$, with a p value of $< .001$ Therefore, computer experience was found to have a significant effect on the degree of computer anxiety when tested as categorical data

Table 19 Chi-Square Results for Computer Experience and Computer Anxiety

	Value	Df	Significance (2-sided)
Pearson Chi-Square	63.038 ^a	9	< .001
Likelihood Ratio	35.813	9	< .001
N of Valid Cases	171		

^a 9 cells (62.5%) have expected count less than 5. The minimum expected count is 1.1

The R squared is .233 for the Univariate ANOVA, 23.3% of the variation in COMPAS scores is explained by the variation in experience. A multiple linear regression was performed with all of the variables (age, gender, temperament style, and computer experience) to determine whether or not the current study included variables that might further explain the variation. The regression model yielded an R squared of .293 (29.3% of the variation in COMPAS scores is explained by the variation in all the collected

variables) Table 20 contains the regression results of the collected variables All of this study's collected variables leave 70% of the variation in COMPAS scores unexplained Therefore, other factors existed that could help further explain the variation in COMPAS scores

Table 20 Multiple Linear Regression Results for all Collected Variables

Rsquare	0.292974
Rsquare Adjusted	0.25806
Root Mean Square Error	25.49141
Mean of Response	101.9591
Observations (or Sum Weights)	171

CHAPTER V

SUMMARY, DISCUSSION, and RECOMMENDATIONS

Summary

The purpose of the current study was to determine whether or not a significant relationship existed between students' temperament styles and their degrees of computer anxiety. The study also sought to determine whether or not demographic variables such as age, gender, or computer experience affect degrees of computer anxiety. Specifically, the study sought to determine whether or not temperament style, age, gender, or computer experience significantly affected computer anxiety as measured by Oetting's (1983) Computer Anxiety Scale (COMPAS).

Three research instruments were administered during this study: a demographic survey, the Myers-Briggs Type Indicator (MBTI), and the Computer Anxiety Scale (COMPAS). The instruments obtained three primary measures. The Myers-Briggs Type Indicator (MBTI) obtained the student's MBTI preference. Temperament style was derived from the MBTI preferences. The Computer Anxiety Scale (COMPAS) obtained the student's general computer anxiety.

The current study found that no significant difference existed between age or temperament style and degrees of computer anxiety. This study did find a significant difference between computer experience and degrees of computer anxiety. The study also found a significant difference between gender and degrees of computer anxiety.

Discussion

The following hypotheses and findings will be discussed below

Hypothesis 1

There is no significant difference between degrees of computer anxiety and gender among students in an introductory computer course. The results from this study failed to support the hypothesis that gender does not significantly affect computer anxiety for students in an introductory computer course. In this study, females ($M = 106.20$, $SD = 28.70$) were significantly more anxious ($p = .038$) than males were ($M = 96.78$, $SD = 30.02$). However, results may vary among populations. Previous researchers (Koohang, 1987, Sievert, et al, 1988) have found gender to have no significant relationship to computer anxiety. Other research stated that findings with a correlation between gender and computer anxiety were problematic because previous research had found that prior experience of males with computers was greater than prior experience of females (Maurer, 1994, p. 370).

Hypothesis 2

There is no significant difference between degrees of computer anxiety and age among students in an introductory computer course. The results from this study supported the hypothesis that age does not significantly affect computer anxiety for students in an introductory computer course. In this study, student's age did not significantly affect computer anxiety ($p = .786$). Previous research (Sievert, et al, 1988)

also found no significant differences in relation to age

The population of this study was predominately 19-21 years of age (67.84%). The other age groups had lower representation, which could have skewed the results. A larger population or a different environment might offer a greater variety of age groups.

Hypothesis 3

There is no significant difference between degrees of computer anxiety for temperament styles as measured by the Keirsey Temperament Styles among students in an introductory computer course. The results from this study supported the hypothesis that temperament style does not significantly affect computer anxiety in an introductory computer course. In this study, student's temperament style did not significantly affect computer anxiety ($p = .111$). No previous research was found that examined the relationship between temperament style and computer anxiety. However, previous research (McPherson, 1998) did find that personality type, as measured by the Myers-Briggs Type Indicator (MBTI), was not significantly related to computer anxiety. McPherson's research was relevant because the current study derived Keirsey Temperament Styles from MBTI preferences.

Maurer (1994) stated that the important question was, "What computer anxiety reduction techniques will work best for what kind of personality?" (p. 372). Research about the correlation between various personality characteristics and computer anxiety was a beginning for this process.

Hypothesis 4

There is no significant difference between degrees of computer anxiety and computer experience among students in an introductory computer course. The results from this study supported the hypothesis that computer experience significantly affects computer anxiety for students in an introductory computer course. In this study, students' computer experience significantly affected computer anxiety ($p < .001$). Previous research (Koohang, 1987, Loyd & Gressard, 1984, Marcoulides, 1988) also found significant relationships between experience and computer anxiety.

Over one-half of the population in this study had more than five years of computer experience (51.46%). Of the population, only 6 of 171 students (3.51%) had less than one year of computer experience.

Recommendations for Further Study

A number of problems and questions emerged throughout this study. Based on these issues and the results of this study, the following recommendations are made:

1. When conducting research, researchers should not only determine the amount but also the nature of the computer experience. When drawing conclusions about such variables as anxiety and aptitude, nature of computer experience could significantly affect results.
2. Similar research should be conducted in an attempt to determine other variables that might affect levels of computer anxiety. By performing a multiple linear regression with all of the collected variables (age, gender, temperament style, and computer experience), approximately 70% ($R^2 = .293$) of the variation in COMPAS scores were unexplained. Therefore, other variables could exist that could help further explain variation in computer anxiety as measured by Oetting's Computer Anxiety Scale (COMPAS).

- 3 Research should be conducted that replicates this study but utilizes other covariates. Similar research could uncover other variables that significantly affect degrees of computer anxiety.
- 4 Research should be conducted that replicates this study on a larger population. Larger numbers within the demographic groups might reveal characteristics more indicative of the demographic group.
- 5 Research should also be conducted that replicates this study on other populations. Other environments may elicit different relationships.
- 6 Research should also be conducted that replicates this study considering computer experience when determining significance between gender and computer anxiety. Previous research (Maurer, 1994) found that male's prior computer experience was greater than female's computer experience and should be considered when studying significance between gender and computer anxiety.

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APPENDICES

APPENDIX A

Cover Letter

PRINCIPAL INVESTIGATOR

WESLEY S. KING

Master of Science Candidate

Department of Human Resource Development

ADVISOR & COMMITTEE CHAIRPERSON

Dr. Ernest W. Brewer

Professor & Department Head

Department of Human Resource Development

Department of Child & Family Studies

February 17, 2000

I would like to thank you for taking the time to participate in this research study. Your time, patience, and honest self-assessment are the keys to success for this research study and are greatly appreciated. I hope the results of the instruments help individuals raise self-awareness of computer and personality characteristics. However, being a participant in this study is not required. Individuals may refuse to participate, or discontinue participation at any point during the data collection period.

This study uses a demographic survey and two research instruments: The Myers-Briggs Type Indicator (MBTI) and the Computer Anxiety Scale (COMPAS). Please complete *ALL* questions in the demographic survey and both instruments. Both instruments have tested reliable, consistent, and accurate indicators of personality type and general computer anxiety. However, self-report instruments are only valid to the degree that the respondent is honest and selects responses that truly characterize him or her. For this reason, the subject's honesty *is* imperative to reduce the likelihood of distortions in the data.

The design of the study is such that the principal investigator is able to assure confidentiality of the subject's identity and all answers. The principal investigator is not obtaining any information in such a manner that subjects can be identified, directly or through identifiers linked to the subjects. The principal investigator is not disclosing any responses outside the research that could reasonably place the subject at risk of criminal or civil liability or be damaging to the subject's financial standing, employability, or reputation. The principal investigator and the statistical analyst will be the only individuals that will have access to the raw data collected.

Each research packet has a *red number* printed in the top right hand corner. Subjects *MUST* keep up with the red number printed on their research package to check their results. The results from the two instruments will be on a website designed specifically for this research study. The website will include each subject's personality type, Keirsey Temperament Style, and level of computer anxiety. The website address is <http://web.utk.edu/~utbowl>.

Sincerely,

Thesis Copy

Wesley S. King

APPENDIX B
Demographic Survey



Check the blank that applies to you.

Please only check one

1. Age?

☐ 18 or younger

☐ 19 - 21

☐ 22 - 26

☐ 27 - 35

☐ 36 or older

2. Gender?

☐ Male

☐ Female

3. Major?

☐ Pre-Professional Program

(Pre-Medicine, Pre-Dental, Pre-Teaching, Pre-Optometry, Pre-Vet, etc.)

☐ Business

☐ Psychology

☐ Undecided

☐ Other _____

4. Do you own or use a computer at home?

☐ Yes

☐ No

5. Check your computer experience?

☐ Less than 1 yr.

☐ 1 - 2 yrs.

☐ 3 - 5 yrs.

☐ More than 5 yrs.

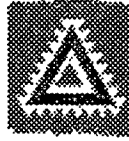


APPENDIX C

Permission letter to reproduce and use Oetting's Computer

Anxiety Scale (COMPAS)

TRI - ETHNIC CENTER
FOR PREVENTION RESEARCH



Dear Colleague.

The Oetting's Computer Anxiety Scale (COMPAS) is no longer being commercially marketed

Enclosed is a copy of the test and the test manual. If you will sign the statement at the bottom of this letter, taking responsibility for ethical use of the test, this letter provides you with permission to reproduce and use the COMPAS. Please sign both copies, return one to us and keep the other copy in your files as a record of providing you with permission to make copies of and use this copyrighted test.

If you are using this test for research purposes, please provide us with a copy of the research report, thesis, or dissertation when it is completed.

Sincerely,

THESIS COPY

E. R. Oetting, Ph.D.

I agree that I will use the Oetting's Computer Anxiety Scale (COMPAS) only in accordance with the ethical guidelines of the American Psychological Association for the use of tests in practice and/or research. I recognize that all rights remain the property of the author. I will not reproduce the copyrighted test or any of its items for sale, either in print or in computerized format.

THESIS COPY

(Signature of Person Responsible for Use of the Test)

THESIS COPY

Date

THESIS COPY

(Printed Name of Person Responsible for Use of the Test)

THESIS COPY

Date

DEPARTMENT OF PSYCHOLOGY
COLORADO STATE UNIVERSITY
FORT COLLINS, CO 80523-1876
1-800-835-8091

APPENDIX D

Oetting's Computer Anxiety Scale (COMPAS)

Attitudes Toward Computers

- 1 Using a hand calculator to add a long list of numbers
 confident ===== worried
- 2 Having a hotel or motel bill worked out by a computer
 distrust ===== trust
- 3 I generally think of computers as
 friendly ===== unfriendly
- 4 Trying to use a small computer to balance a checkbook would usually be
 frustrating ===== comfortable
- 5 Correcting an error on the screen
 easy ===== tricky
- 6 Learning to use a small computer to do a budget
 comfortable ===== scared
- 7 Interpreting a complicated computer printout
 worried ===== secure
- 8 Computers give me
 more control ===== less control
- 9 Making a mistake when entering data for analysis because of nervousness
 likely ===== unlikely
- 10 Trying to write a program in BASIC as part of a class
 worried ===== secure
- 11 Deciding which type of personal computer to buy
 secure ===== insecure
- 12 Explaining a problem that you have not been able to solve to a computer
 consultant
 frightened ===== fearless

13. Using a hand calculator to multiply or divide
 confident ===== worried
14. Voting using a computer
 distrust ===== trust
15. Just hearing the word "computer" makes me feel
 interested ===== nervous
16. Taking a job where you have to regularly enter data into a computer
 concerned ===== unconcerned
17. Typing on a word processor instead of a typewriter
 less nervous ===== more nervous
18. Learning to keep records for a small business on a computer
 confident ===== anxious
19. Knowing the right words or "language" when talking about using a computer
 insecure ===== safe
20. Reading a book about how computers can be used
 enjoy it ===== avoid it
21. Looking at the keyboard of a small computer
 anxious ===== comfortable
22. Trying to use a small computer to solve math problems
 frustrating ===== useful
23. When a message appears on the screen that you have not seen before
 confident ===== worried
24. Trying to operate a small computer when you are all alone
 worried ===== unworried

- 25 Using a hand calculator to balance a checkbook
relaxed ===== nervous
- 26 Getting a bank statement printed by a computer
distrust ===== trust
- 27 Watching computers appear in more and more places
exciting ===== frightening
28. Learning how to enter long lists of data into a computer
scared ===== comfortable
- 29 Typing on a word processor instead of a typewriter
easier ===== harder
- 30 Figuring out profits and losses by using a small computer
comfortable ===== scared
- 31 Discussing computers with a group of people who know a lot about using them
insecure ===== safe
32. Learning a new programming language
safe ===== unsafe
33. When the computer says "INCORRECT ADDRESS"
anxious ===== confident
- 34 Taking a test that requires writing a fairly simple program on a computer
worried ===== secure
- 35 Deciding what software to buy for a small computer
confident ===== insecure
36. Consulting a computer manual to find out what you did wrong
anxious ===== relaxed

- 37 Using a hand calculator to calculate a percentage
relaxed ===== nervous
- 38 Having your vote counted by a computer
distrust ===== trust
- 39 In general computers are
exciting ===== frightening
40. Correcting a mistake you made when typing information into a computer
concerned ===== unconcerned
- 41 Taking a class that requires using a word processor
unworried ===== worried
- 42 Using a computer to try out different ideas (What would costs and profits be if _____?)
comfortable ===== anxious
- 43 Taking an advanced course in computer programming
unsafe ===== safe
- 44 Reading a technical book about programming small computers
enjoy it ===== avoid it
- 45 Playing a game on a computer where you have to type in answers to questions
strained ===== relaxed
- 46 Solving simple problems on a small computer with someone nearby to answer questions
anxious ===== confident
- 47 When the keyboard stops working
confident ===== anxious
- 48 Knowing what to do with a small computer
confused ===== clear

APPENDIX E

Qualification Form

Consulting Psychologists Press, Inc.

Wesley S King
NAME ☒ I am a student, my professor's signature is below

University of Tennessee, Knoxville
ORGANIZATION

Masters of Science Student – Department of Human Resource Development
TITLE

xxxx Ridgfield Dr
STREET ADDRESS

Knoxville, TN xxxx
CITY/STATE/ZIP

(xxx) xxx-xxxx (xxx) xxx-xxxx
PHONE HOME/WORK

Which of the following describes your level of training?

Dr Ernest W Brewer (Major Professor – Direct Supervisor of Study) – Doctorate in Education
DOCTORATE (Field/Institution/Year)

Dr. Ernest W Brewer (Major Professor) – Masters in Counseling
MASTER'S (Field/Institution/Year)

(Wesley S King) Human Resource Development – University of Tennessee – 1997
BACHELOR'S (Field/Institution/Year)

Professional Counselor (PC) & Certified High School Counselor License # - xxxxxxxx
LICENSURE AREA? /LICENSE #

Dr Ernest W Brewer (Major Professor) PC – Professional Counselor
PROFESSIONAL CERTIFICATION AREA?

American Society of Training & Development (ASTD)
PLEASE SPECIFY PROFESSIONAL ORGANIZATIONS YOU ARE A MEMBER
(PLEASE DO NOT USE ABBREVIATIONS)

PLEASE CHECK EACH COURSE OR WORKSHOP YOU HAVE COMPLETED

- ☒ GRADUATE / UNDERGRADUATE
- ☒ TEST INTERPRETATION
- ☒ PSYCHOMETRICS & MEASUREMENT THEORY
- ☒ EDUCATIONAL STATISTICS
- ☒ OTHER

MBTI® QUALIFYING WORKSHOPS
☐ APT
☐ CAPT
☐ KROEGER
☐ TEMPERAMENT RESEARCH INSTITUTE
☐ TYPE RESOURCES
☐ ZEISSET ASSOC

LOCATION/DATE ATTENDED
STRONG QUALIFYING WORKSHOP

LOCATION/DATE ATTENDED
CATEGORIZE TYPE OF WORK
☐ BUSINESS
☐ K-12
☐ GOVERNMENT
☒ UNIVERSITY
☐ OTHER

INDICATE YOUR PRIMARY PURPOSE FOR USING THE TEST(S)
☐ CAREER COUNSELING
☐ ORGANIZATION DEVELOPMENT
☐ PERSONNEL DEVELOPMENT
☐ PERSONAL COUNSELING
☐ THERAPY/PRIVATE CONSULTING
☒ Other Master Level Thesis Research Study – University of Tennessee, Knoxville

Licensee's Signature/Date

I agree that CPP's test instruments are licensed and not sold to me, and I agree not to resell, sublicense, export, redistribute or otherwise transfer for use by any third person or entity any copy of any such instruments

Thesis Copy

LICENSEE'S SIGNATURE/DATE

Thesis Copy

PROFESSOR'S SIGNATURE/DATE

I agree to this student's use of the ordered items and endorse this statement

Dr Ernest W Brewer, Professor & Department Head

PRINT PROFESSOR'S NAME

University of Tennessee – Department of Human Resource Development

UNIVERSITY/DEPARTMENT

I understand the elements of testing essential to the appropriate use of standardized tests, and I have personal knowledge of professional testing standards (such as APA-AERA-NCME Standards for Educational and Psychological Testing, 1985) I further warrant to CPP that I possess the appropriate training and competencies to use the testing materials and services I seek to license I agree that my use of such materials will adhere to applicable local and national laws and regulations and the ethical principals of my profession I assume full responsibility for the proper use of the testing material I order from CPP

VITA

Wesley S King is an east Tennessee native, born on July 6, 1974 in Knoxville, Tennessee. He attended and graduated with honors from Powell High School, located in Powell, Tennessee.

After high school, Mr King attended Tennessee Technological University before returning to The University of Tennessee. In May 1997 he received a Bachelor of Science degree in Human Ecology with a major in Business/Marketing Education and minor in Business Administration.

Mr King chose to immediately begin graduate coursework in the Department of Human Resource Development at The University of Tennessee, ranked 9th by U S News and World Report. The focus of his research interest was computer anxiety. He felt a better understanding and appreciation of student characteristics would enable educators to determine and use strategies to create a learning environment conducive to reducing the commonality of computer anxiety. He received the Master of Science in Human Resource Development in May 2000.