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The research self-efficacy of counselor education and supervision doctoral students

Amy L. Jones
The University of Toledo

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A Dissertation

entitled

The Research Self-Efficacy of
Counselor Education and Supervision Doctoral Students

by

Amy L. Jones

Submitted to the Graduate Faculty as partial fulfillment of the requirements for the
Doctor of Philosophy Degree in Counselor Education

______________________________
Nick J. Piazza, Ph.D., Committee Chair

______________________________
Wendy Cochrane, Ph.D., Committee Member

______________________________
Kathleen Salyers, Ph.D., Committee Member

______________________________
Jennifer Smirnoff, Ph.D., Committee Member

______________________________
Dr. Patricia R. Komuniecki, Ph.D., Dean
College of Graduate Studies

The University of Toledo

May 2012
Research self-efficacy refers to a person’s confidence in their ability to perform research activities (Bailey, 1999; Bard et al., 2000; Deemer, 2010; Holden et al., 1999; Kahn, 2001; Mulliken et al., 2007; Phillips et al., 2004; Unrau & Beck, 2004, Unrau & Grinnel, 2005). Little has been written on this topic in relation to Counselor Education and Supervision (CES) doctoral students. The purpose of this small scale exploratory study was to gather data on variables that may be related to doctoral CES students’ perceived research self-efficacy and learn about the factors predictive of the students’ research self-efficacy.

A cross-sectional survey research design was used to investigate this construct among Counselor Education and Supervision doctoral students in programs approved by the Council for Accreditation of Counseling and Related Programs (CACREP). A non-probability, non-randomized, convenience sample (n=60) was obtained from the North Central, Southern, and Northwestern regions of the Association for Counselor Education and Supervision (ACES). The Clinical Research Appraisal Inventory was used to
measure research self-efficacy and a demographic questionnaire was used to gather demographic information about the participants.

The findings from this study indicate the majority of CES doctoral students do not feel confident in their research skills. The results also indicate that as the number of research training credit hours completed increases so does the research self-efficacy of CES doctoral students. The age, gender, career aspirations, and enrollment status of the participants did not predict their research self-efficacy.
For My First Teachers

Cynthia Joy and Gardner Louis
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Table of Contents

Abstract iii
Acknowledgements vi
Table of Contents vii
List of Tables x

I. Introduction 1
   A. Statement of the Problem 1
   B. Background of the Problem 3
   C. Purpose of the Study 5
   D. Research Questions 6
   E. Significance of Study 7
   F. Definition of Terms 7
   G. Organization of the Chapters 8

II. Review of the Literature 9
   A. Introduction 9
   B. Self-Efficacy 11
   C. Self-Efficacy in Relation to Proximal and Distal Factors 13
   D. Research Self-Efficacy in Allied Professions 16
   E. Similarities of Counselor Education and Supervision and Allied Professions 19
   F. Research Self-Efficacy and Statistics Anxiety 20
   G. Self-Efficacy Applied to Clinical Counseling and Supervision 22
   H. Research and Counselor Education and Supervision 24
List of Tables

Table 1  Frequencies for Gender………………………………………………………………………………49
Table 2  Descriptive Information for Age…………………………………………………………………….49
Table 3  Descriptive Information for the Number of Completed Doctoral CES Research Training Credit Hours Completed…………………………………………………………….52
Table 4  Frequencies for Career Aspirations……………………………………………………………………53
Table 5  Frequencies for Enrollment Status……………………………………………………………………54
Table 6  Frequencies of Overall Confidence and CRAI score………………………………………………55
Table 7  Overall Confidence and Total CRAI Score Correlation……………………………………………56
Table 8  Summary of Logistic Regression for Research Question Two………………………………………57
Table 9  Frequencies for Research Question 3………………………………………………………………….57
Table 10 Summary of Logistic Regression for Research Question Three………………………………….58
Table 11 Summary of Logistic Regression for Research Question Four…………………………………….59
Table 12 Frequencies and Crosstabulation of Career Aspirations and CRAI Score…………………………60
Table 13 Summary of Logistic Regression for Research Question Five…………………………………….60
Table 14 Classification Table for Research Question 6…………………………………………………………61
Table 15 Summary of Logistic Regression for Research Question Six………………………………………62
Chapter One

Introduction

Statement of the Problem

Confidence in conducting research activities is known as research self-efficacy (Bailey, 1999; Bard et al., 2000; Deemer, 2010; Holden et al., 1999; Kahn, 2001; Mulliken et al., 2007; Phillips et al., 2004; Unrau & Beck, 2004, Unrau & Grinnel, 2005). Research self-efficacy is often impeded because graduate students commonly experience statistics anxiety and trepidation in actively participating in the research process (Onwuegbuzie, 2003). Learning about ways to help students overcome these anxieties and build confidence in their research skills is one way to overcome this (Bailey, 1999; Bard et al., 2000; Deemer, 2010; Holden et al., 1999; Kahn, 2001; Mulliken et al., 2007; Phillips, 2004; Unrau & Beck, 2004, Unrau & Grinnel, 2005). Very little data exists on the topic of research self-efficacy in relation to doctoral students in Counselor Education and Supervision (CES). Therefore, the purpose of this small scale exploratory study was to learn about CES doctoral students’ research self-efficacy.

Reisetter et al. (2004) has addressed the lack of studies on the topic of counseling research and acknowledges that no studies show how CES doctoral students view both qualitative and quantitative research using statistical analyses. Reisetter et al. (2004) and Atieno Okech et al. (2006) acknowledge that no studies show how doctoral students in Counselor Education and Supervision view the many aspects of research including their own skills in using both quantitative and qualitative research methods.

To date, very little empirical data exists on research self-efficacy among doctoral students in Counselor Education and Supervision within the professional counseling
literature. Discussions, however, about research in the counseling field do exist (Atieno Okech et al., 2006; Barrio et al., 2008; Black & Helm, 2009; Black & Helm, 2010, Crockett et al., 2010; Ramsey et al., 2002). It has been noted that producing and publishing research plays a vital role in the advancement of the counseling profession (Bailey, 1999; Bard et al., 2000; Black & Helm 2009; Crockett et al., 2010; Fong & Malone, 1994; Kline, 2003; Lanning, 1990; Ramsey et al., 2002, Smaby et al., 2002). The Council for Accreditation of Counseling and Counseling Related Educational Programs (CACREP) includes research standards that Counselor Education and Supervision doctoral programs must meet in order to become accredited (CACREP, 2009). Therefore, one could presume that competence in carrying out research related activities is an essential component of CES doctoral training. Competence, however, does not necessarily translate into confidence in conducting research.

One career path of a professional in Counselor Education and Supervision is that of a professor in a counseling program. If students do not become self-efficacious researchers during their doctoral studies they may enter into CES positions lacking the confidence necessary to produce research (Atieno Okech et al., 2006, Auxier et al., 2003) and teach counseling students research skills (Phillips et al., 2004). If Counselor Educators and Supervisors fear research, or are unable to conduct research confidently, then how will they be able to teach these skills to their students? In addition, Counselor Educators and Supervisors pursuing academic careers may need to use their research skills to produce enough of their own research to achieve tenure and promotion (Bailey, 1999). Some CES doctoral students may choose careers that do not include research as a component if they lack confidence in their own research skills (Bard et al., 2000; Daniels
& Larson, 2001; Kahn, 2001; Lent & Brown, 2008; Malone, 2002; Mulliken et al., 2007; Reisetter et al., 2004). One could presume that CES doctoral students who become self-efficacious researchers during their studies will become self-efficacious Counselor Educators and Supervisors who will feel prepared to conduct and publish research as well as teach their students the research process (Tang et al., 2004); all of which will continue to strengthen the counseling profession.

**Background of the Problem**

Since very little research literature exists on CES doctoral students’ research self-efficacy, it is necessary to refer to existing literature on the topic of research within the counseling field. Reisetter et al. (2004) states, “Many graduates of counselor education programs at the doctoral level are neither interested nor productive in research” (p. 2). Atieno Okech et al. (2006), Bard et al. (2000), and Barrio et al. (2008) discuss the lack of focus on research productivity among counselors and Leedy and Ormrod (2001) found that the word research alone is nebulous for many counselors. Reisetter et al. (2004) and Ramsey et al. (2002) discuss that historically counseling programs have prepared students to become practitioners and consumers of research versus producers of research. These discussions, however, have not always specified if the graduate students are masters or doctoral-level trainees.

Despite these discussions, many authors (Atieno Okech et al., 2006; Barrio et al., 2008; Black & Helm, 2009; Black & Helm, 2010; Bong & Clark, 1999; Calley & Hawley, 2008; Crockett et al., 2010; Dimmit et al., 2005; Haag Granello, 2007; Kline, 2003; Kline & Farrell, 2005; Lanning, 1990; Reisetter et al., 2004; Ramsey et al., 2002 Smaby, 1997; Smaby et al., 2002; Weinrach et al., 2001; West et al., 1995) agree that
research continues to contribute to the emergence of the counseling profession as well as maintain current high standards. Therefore, Counselor Educators and Supervisors must address the training of counselors including ways to prepare self-efficacious researchers.

Research provides empirical support for advocacy efforts aimed at advancing the profession (Bailey, 1999; Black & Helm, 2009; Calley & Hawley, 2008; Kline, 2003) and helping clients whom counselors serve (Buser, 2008; Haag Granello, 2007; Kahn, 2001; Kahn & Miller, 2000). Continuing efforts to conduct and publish research demonstrating the efficacy of counseling interventions (Myers et al., 2002) is necessary to inform the work of counselors. Research supporting advocacy efforts is continually needed to argue for the professional rights of counselors to practice and utilize their training without restrictions imposed by other professions (Eriksen, 1999). Advocacy promoted the movement for licensure of professional counselors. As a result of these efforts, licensure has now been achieved in all fifty states. Research was used to support these advocacy efforts and professional accomplishments. This provides additional support for why research is important to the counseling field, and why research self-efficacy is relevant for CES doctoral students.

Counselors are held accountable for their work (Dimmit et al., 2005), whether in a school and/or agency setting. In order for both clinical and school counselors to achieve accountability and help the counseling profession continue to progress through research (Fong & Malone, 1994; Kahn & Miller, 2000), developing confidence in carrying out research related activities is an imperative component of the training process. Just as CES doctoral students continue to develop confidence in their clinical, teaching, and supervision skills, research skills can and should continue to develop as well. A vast
amount of research exists on clinical and supervision self-efficacy within the counseling field (Auxier et al., 2003; Barnes, 2004; Buser, 2008; Carlson et al., 2006; Daniels & Larson, 2001; Hensley et al., 2003; Koch et al., 2004; Magnuson et al., 2000; Tang et al., 2004), however, few studies exist that specifically address research self-efficacy among Counselor Education and Supervision doctoral students in CACREP-approved programs.

**Purpose of the Study**

Counseling research self-efficacy is defined as a person’s belief about his or her ability to confidently conduct research related to counseling (Bailey, 1999; Bard et al., 2000; Deemer, 2010; Holden et al., 1999; Kahn, 2001; Mulliken et al., 2007; Phillips, 2004; Unrau & Beck, 2004, Unrau & Grinnel, 2005). Understanding what contributes to the development of research self-efficacy among doctoral students in Counselor Education and Supervision programs may inform the research training of future generations of counselors. Therefore, collecting information on the educational and research-related experiences of CES doctoral students’ may contribute to the knowledge base on research self-efficacy within the counseling profession.

In this study, the researcher investigated CES doctoral students’ perceptions about the confidence they have in their own research skills. The findings provide insight into how Counselor Educators and Supervisors can prepare CES doctoral students to engage in research. Empirical evidence related to research self-efficacy will expand upon the data that already exists within the counseling field.

One previous study on the research self-efficacy of CES doctoral students, investigated the age, gender, and career aspirations of the participants in the study (Lambie & Vaccaro, 2011). This research project will explore these variables and
include the research training credit hours completed and enrollment status of CES doctoral students as well. The purpose of this small scale exploratory study was to gather data on the perceived research self-efficacy of Counselor Education and Supervision doctoral students in CACREP-approved programs and learn about which factors are predictive of the students’ research self-efficacy.

**Research Questions**

1. What is the overall research self-efficacy reported by doctoral students in CACREP-accredited Counselor Education and Supervision programs?

2. Does the number of research training credit hours completed by doctoral students in CACREP-accredited Counselor Education and Supervision programs predict doctoral students’ research self-efficacy as measured by the Clinical Research Appraisal Inventory (CRAI)?

3. Does the gender of Counselor Education and Supervision doctoral students in CACREP-accredited programs predict research self-efficacy as measured by the CRAI?

4. Does the age of Counselor Education and Supervision doctoral students in CACREP-accredited programs predict research self-efficacy as measured by the CRAI?

5. Does the career aspiration (practice, school, community, or academia) of Counselor Education and Supervision doctoral students in CACREP-accredited programs predict research self-efficacy as measured by the CRAI?

6. Does the enrollment status (part-time or full-time) of Counselor Education and Supervision doctoral students in CACREP-approved programs predict research self-efficacy as measured by the CRAI?
Significance of Study

This study is significant because very little research exists on the topic of research self-efficacy and Counselor Education and Supervision doctoral students. After conducting a literature review, few articles emerged which even referred to the topic of research self-efficacy. One article was found on CES doctoral students’ perceptions of qualitative research (Reisetter et al., 2004), and one article was found on CES doctoral students’ research self-efficacy. The research literature did contain information on the history of research in the counseling profession (Dimmit et al., 2005; Weinrach et al., 2001; West et al., 1995), although much still needs to be learned about this topic area. This study establishes a body of knowledge on the topic of research self-efficacy among CES doctoral students in CACREP-accredited programs.

This investigation is significant because it adds to the understanding about research within the counseling profession. Learning more about how CES doctoral students can achieve confidence as researchers (Bard et al., 2000; Kahn, 2001; Kahn & Miller, 2000) is essential for the profession to continue moving forward (Fong & Malone, 1994; Kahn & Miller, 2000), as well as assure future students the opportunity to learn the research process (Atieno Okech et al., 2006; Bard et al., 2000; Calley & Hawley, 2008; Deemer, 2010; Fong & Malone, 1994; Kline, 2003; Lanning, 1990; Smaby, 1997) from confident Counselor Education and Supervision faculty members.

Definition of Terms

The following terms will be used throughout the study. In this section, the terms will be defined for better understanding of the research:

- Competence: The ability to perform a task(s) or behavior(s)
• Competencies: The ability to perform multiple tasks or behaviors
• Confidence: Belief in oneself and one’s abilities
• Counseling self-efficacy: The belief that one is capable of successfully performing counseling tasks and behaviors
• Council for Accreditation of Counseling and Related Educational Programs (CACREP): The national accreditation body for counseling programs that defines quality for counselor education preparation programs
• Inefficacy: The extent to which an individual believes that he or she is incapable of performing a task or behavior
• Research self-efficacy: The belief that one is capable of successfully performing research tasks and behaviors
• Self-efficacy: The belief that one is capable of performing a behavior or task
• Vicarious experience: Experience that is gained by watching others

Organization of the Chapters

This chapter explained the purpose and significance of the study. The research questions were listed and the terms used throughout this study were defined. The following chapter will be the Review of the Literature which will expand on the theoretical and practical implications of self-efficacy theory as it relates to research. The current literature on research in the counseling profession will be summarized as well. The third chapter explains the methodology that was used to conduct the study.
Chapter Two

Review of the Literature

Introduction

Research self-efficacy refers to person’s confidence in their ability to carry out specific research related tasks (Bailey, 1999; Bard et al., 2000; Deemer, 2010; Holden et al., 1999; Kahn, 2001; Mulliken et al., 2007; Phillips et al., 2004; Unrau & Beck, 2004, Unrau & Grinnel, 2005). Counselor Education and Supervision (CES) doctoral students who become self-efficacious researchers during their studies will feel trained to conduct and publish their own research as well as teach their students the research process; all of which will continue to strengthen the counseling profession.

As a small scale exploratory study, the goal for this research project was to examine the perceived research self-efficacy of doctoral students in Counselor Education and Supervision programs approved by the Council on Accreditation of Counseling and Related Educational Programs (CACREP). In this chapter, the author will provide a review of the literature on the importance of this subject to the professional development of Counselor Educators and Supervisors and to the counseling professions’ continued advancement in providing evidence-based practices to the clients they serve.

Producing and publishing research plays a significant role in the advancement of professions including counseling (Fong & Malone, 1994; Kahn & Miller, 2000; Lambie & Vaccaro, 2011). It is the primary way to inform clinical practice and develop the profession within the scientist-practitioner paradigm (Lambie & Vaccaro, 2011). It informs professional advocacy activities including ways to demonstrate accountability for the work counselors do (Meyers et al., 2002). CACREP, the organization that grants
counseling programs accreditation, recognizes the importance of research and sets standards for instruction in this area. The 2009 CACREP doctoral standards delineate the research competencies expected to be obtained by CES doctoral students in accredited programs (Appendix K). Bailey (1999) notes that the purpose of the doctoral degree is to develop research skills and confidence in one’s research abilities in order to publish in peer-reviewed academic journals. For these reasons it is imperative that CES doctoral students gain the confidence necessary to produce research related to the counseling field.

Preparing Counselor Education and Supervision doctoral students to become active producers of research is critical (Fong & Malone, 1994; Kahn & Miller, 2000; Lambie & Vaccaro, 2011). It sets the foundation for academic discourse about clinical practices and professional issues (Lambie & Vaccaro, 2011). Therefore, learning about CES doctoral students’ perceptions of their own research abilities and factors that predict their research self-efficacy is needed. It is also necessary to understand what barriers may exist for doctoral Counselor Education and Supervision students in becoming self-efficacious researchers. This information may assist Counselor Education and Supervision faculty members in helping their students overcome the barriers to becoming self-efficacious counseling researchers.

If students do not become self-efficacious researchers during their doctoral studies they may enter into Counselor Education and Supervision positions lacking the confidence in those skills known to be necessary to produce quality research (Barrio et al., 2008; Black & Helm, 2009; Fong & Malone, 1994; Kline, 2003; Kline & Farrell, 2005; Love et al., 2007), as well as teach their students about the many components of research (Atieno Okech et al., 2006; Bard et al., 2000; Calley & Hawley, 2008; Daniels &
Larson, 2001; Kahn & Miller, 2000; Haag Granello, 2007; Maier & Curtin, 2005). In addition, Counselor Educators and Supervisors need confidence in their research skills to produce enough of their own research to advance in academic positions or support their clinical activities.

**Self-Efficacy**

Self-efficacy refers to the belief people have in their ability to perform a particular task or function (Bandura, 1977; 1986; 1989, 2006; Barnes, 2004; Holden et al., 1999). The history of self-efficacy begins in 1977 with Albert Bandura’s social learning theory which was renamed social cognitive theory in 1986 (Bandura, 1989). Self-efficacy is one of the key components in this theory. The concept of self-efficacy has been applied to a variety of constructs including research. Holden et al. (1999) define research self-efficacy as “the extent to which students are confident about carrying out different research tasks, from library research to designing and implementing practice research projects” (p. 474).

Bandura (1995) claimed that self-efficacy makes a difference in how people think, feel, behave, and motivate themselves. A low sense of self-efficacy is associated with feelings of stress, depression, anxiety, and helplessness. Doctoral CES students with a low sense of research self-efficacy may experience anxiety, fear, or trepidation toward conducting research. Self-efficacy can also influence people’s choice of activities. Counselor Educators and Supervisors with a low sense of research self-efficacy may avoid research related activities.

According to Bandura (1989, 1993, 1990, 1995) self-efficacy levels can increase or hamper motivation. “People’s self-efficacy beliefs determine their level of motivation,
as reflected in how much effort they will exert in an endeavor and how long they will persevere in the face of obstacles” (Bandura, 1989, p. 1176). Counselor Educators with a low sense of self-efficacy may not be motivated to conduct research activities that require perseverance and motivation over extended periods.

A strong sense of efficacy facilitates cognitive processes and performance in a variety of settings including quality of decision-making and academic achievement (Bandura, 1989, 1991, 1995). Counselor Educators with a low sense of research self-efficacy may decide they are not capable of conducting quality research even though they may possess the requisite skills (Maier & Curtin, 2005).

Self-efficacy is developed through four sources of influence (Bandura, 1990; 1991; 1993; 1995). These include mastery experiences, vicarious experiences, social persuasions, and physiological and affective states (Bandura, 1995; Deemer, 2010; Morris & Usher, 2011; Prieto & Meyers, 1999). Of these four influences, mastery or performance experiences are the most powerful predictors of self-efficacy (Bandura, 1989; 1990; 1995; Deemer, 2010; Morris & Usher, 2011; Prieto & Meyers, 1999). Bandura (1990, 1991, 1993, 1995) refers to mastery experiences as the actual behavior a person successfully performs. Vicarious experiences occur when an individual observes someone else perform a particular behavior or set of behaviors. When an individual observes a model successfully performing a behavior, the individual’s confidence in his or her own ability to perform the same behavior will increase. Social persuasion influences self-efficacy when an individual is encouraged by someone else to believe in his or her own ability to perform a task successfully. Finally, the physiological and affective states influence refers to how a person physically and/or emotionally reacts
when performing a behavior. This information is then used by an individual to determine his or her capabilities (Bandura, 1977; 1989; 1995).

Self-efficacy beliefs influence the goals people set for themselves. People with stronger self-efficacy beliefs for their performance set higher goals and commit to goals more strongly than do people with weaker beliefs about their abilities (Bandura, 1991; 1995). Self-efficacy beliefs influence the plans and strategies people envision for attaining these goals. They also influence the development of rules for predicting and influencing events. Self-efficacy influences the efficiency and effectiveness of problem solving (Bandura, 1986; 1995; Ganske & Ashby, 2007). When faced with complex decision-making tasks, people with a strong sense of self-efficacy remain highly efficient and highly effective problem solvers and decision makers; those with low self-efficacy become erratic, inefficient, and ineffective (Bandura & Jourden, 1991; Wood & Bandura, 1989).

If people enter situations in which they expect to perform poorly (although they may indeed possess the requisite skills), they may deprive themselves of potential success and experiences that would contradict their low sense of efficacy (Bandura, 1986; 1995; Maier & Curtin, 2005). If this theory holds true, doctoral students in Counselor Education and Supervision who develop a strong sense of research self-efficacy may feel more confident in their ability to engage in or conduct research activities.

**Self-Efficacy in Relation to Proximal and Distal Factors**

Current self-efficacy beliefs may be either distal (past) or proximal (current or immediate) (Bandura, 1989;1991; 1995). Self-efficacy for a specific performance in a specific situation measured at a specific time will be the result of the confluence of distal
and proximal information. For example, one’s self-efficacy in a current important academic endeavor, such as presenting research at a professional counseling conference, will be determined by a variety of distal sources of self-efficacy information. These sources include past successes and failures in similar situations with similar persons including evaluations of one’s academic presentations made by other people, observations of others similar to oneself under similar circumstances, and recollections of one’s physiological and emotional state in similar situations. In addition, proximal sources of information will include one’s current physiological and affective state (e.g., anxious vs. relaxed, sad vs. happy, tired vs. energetic), one’s own evaluation of one’s ongoing performance via self-observation and self-monitoring, and interpretations of the reactions of other people. This information may indicate on a moment-to-moment basis the success or failure of one’s efforts. As in the previous example, monitoring the audience’s level of participation and attention during one’s presentation at a professional counseling conference may provide this moment-to-moment feedback. Just as proximal (immediate) consequences usually exert greater control over behavior than distal (past) consequences, proximal (current) information about self-efficacy is likely to have a more powerful immediate effect on current self-efficacy than distal (past) information (Bandura, 1989; 1995).

The meaning that people attach to self-efficacy seems to depend partly on the situation at hand. In situations in which the possibility of immediate aversive outcomes is high, people may interpret self-efficacy questions (“Do you think you could teach a research methods class?”) not as questions about ability or skill, but as questions about willingness. If someone expects a negative outcome from an event to occur, such as
teaching a research course, they may not be willing to teach the class even though they may have the ability and skills to do so.

In addition, the relationship between the measures of self-efficacy and outcome expectancy depends on how clearly they are defined and measured. If outcome expectancy is defined and measured simply as an expectancy for goal achievement (“Do you expect to receive an A in a counseling research course?”) rather than the expectancy that a certain behavior is likely to lead to that goal (“Do you believe that completing statistics courses will help you prepare for conducting research in a professional role after graduation?”), then a strong correlation between outcome expectancy and self-efficacy is inevitable, because one has not distinguished between performance beliefs and behavior (outcome beliefs) (Bandura, 1993; 1995; Bard et al., 2000). If outcome expectancy is defined and measured as the perceived contingency between behavior and a consequence (“Do you believe that statistics courses will help you conduct research in a professional setting?”) then its correlation with self-efficacy (Do you believe you can conduct research in a professional setting?”) will probably be lower, and outcome expectancy may add to self-efficacy in predicting intentions and behaviors.

A strong correlation between self-efficacy and outcome expectancy is also guaranteed if self-efficacy is defined as perceived likelihood of goal attainment (“Do you think you will be able to publish a research article in a professional counseling journal?”), because goal attainment depends on the ability to perform certain behaviors and on the consequences of those behaviors. Self-efficacy measures should be concerned, as much as possible, with behavioral performance beliefs, and outcome expectancy measures with
behavior-outcome beliefs, as Bandura has repeatedly indicated (1977, 1991). This
delineation provides clarification about the concept of self-efficacy.

**Research Self-Efficacy in Allied Professions**

Professional programs in the social sciences and humanities including medicine
(Mulliken et al., 2007), psychology (Deemer, 2010; Kahn, 2001; Phillips et al., 2004;
Prieto & Meyers, 1999), social work (Holden et al., 1999; Unrau & Beck, 2004; Unrau &
Grinnel, 2005), and mass communications (Maier & Curtin, 2005) have applied self-
efficacy theory to research. Researchers in these fields have asserted that their students
tend to shy away from research activities despite having the aptitude to engage in them.
Factors such as mentoring (Kahn, 2001; Phillips et al., 2004; Prieto & Meyers, 1999), the
research training environment (Deemer, 2010; Kahn, 2001; Mulliken et al., 2007),
advancement of the profession (Maier & Curtin, 2005; Mulliken et al., 2007), and career
choice (Mulliken et al., 2007) have been explored in relation to research self-efficacy.

Mulliken et al. (2007) noted that there has been a decrease in the number of grants
awarded by the National Institutes of Health (NIH) to physicians conducting clinical
research. According to Mulliken et al. (2007) this trend could reflect a threat to the
physician-scientist professional identity which places a high value on research for the
treatment of human disease. The authors have speculated on reasons for this decline.
One reason involves medical trainees’ schedules which are filled between studying and
clinical rotations leaving little time to engage in research activities. In addition, the
authors posit that most medical students have not been involved in research prior to
entering medical school and therefore have not been exposed to the many aspects of
conducting a research study. The research self-efficacy of medical students may be
influenced by the aforementioned factors as well as influence the career choices they make. For these reasons, Mulliken et al. (2007) developed the Clinical Research Appraisal Inventory (CRAI) to assess research self-efficacy of medical students and physicians.

Research self-efficacy has also been discussed within the psychology literature. Kahn (2001) and Phillips et al. (2004) have addressed the lack of scholarly productivity and scholarly interest within this field as well as the importance of research in informing clinical practice. Deemer (2010) noted that research productivity and research interest are positively correlated with research self-efficacy. Deemer found that positive feedback increased research self-efficacy among a group of counseling psychology doctoral students. Females reported less confidence in their research abilities with gender being a significant predictor over and above age (Deemer, 2010).

Kahn (2001) reported the research training environment was indirectly predictive of research self-efficacy in his study of 149 counseling psychology students. Phillips et al. (2004) used research self-efficacy as a theoretically related variable when testing The Internship Research Training Environment Scale, an instrument used to assess the research training environment of pre-doctoral psychology internships. In addition, mentoring psychology students in research has been associated with increased research productivity and research self-efficacy (Kahn, 2001; Phillips et al., 2004; Prieto & Meyers, 1999).

The social work literature addresses research productivity as well as the relationship between research and clinical practice (Unrau & Grinnell, 2005). According to these authors, graduate social work students experience greater research anxiety and
less research interest than students in other disciplines such as psychology. Participants from a cross-sectional sample of undergraduate and graduate social work students found gains in research self-efficacy over the course of a semester long research class (Unrau & Grinnell, 2005). In another study, Unrau and Beck (2004) compared the research self-efficacy of social work students and speech pathology students taking research and practice courses. Differences in the students’ research self-efficacy over the course of the semester were attributed to how the courses were designed rather than to qualities of the student. According to Unrau and Beck (2004), this finding indicates a need within the social work and speech language pathology professions to set research related achievement standards and monitor these learning objectives during a student’s program of study. These authors posit that expecting students to complete research courses will improve their research self-efficacy and future performance in professional roles. In addition, Unrau and Beck (2004) indicate increases in student research self-efficacy need to be an expectation within future social work and speech language pathology training programs.

Maier and Curtin (2005) discuss how journalism and mass communication students experience research anxiety despite having the actual ability to interpret numbers and succeed in research courses. Journalism students have reported trepidation and fear of statistics and research. The response of a doctoral student included in the results of the Maier and Curtin (2005) study highlight this point, “I’ve never been able to do math. I’m scared of it. I hate it. But you know what? I always got A’s in math” (p. 356). These authors suggest that self-efficacy theory can be applied to research to help journalism and mass communications students overcome anxieties and gain confidence in their research
capabilities. This could be achieved through designing instructional materials that are divided into research sub-skills that can be mastered and built upon until a student is able to execute the skill set independently (Maier & Curtin, 2005). These mastery experiences would help to enhance the students’ research self-efficacy.

The discussion about research and research self-efficacy is a point of interest and investigation in many of the helping professions. Researchers involved in all of these professions established some common ground. All posit that research self-efficacy needs to be enhanced through training and curriculum, so their respective fields can continue to advance and ultimately the populations with which they work can be better served (Kahn, 2001; Maier & Curtin, 2005; Mulliken et al., 2007; Unrau & Grinnell, 2005).

**Similarities of Counselor Education and Supervision and Allied Professions**

Counselor Education and Supervision doctoral training has similarities to other allied professions. Social work, speech language pathology, medicine, psychology, and counseling have professional standards, academic expectations, and practice frameworks that students are expected to learn and apply to become competent practitioners in each of these respective fields (Kahn, 2001; Maier & Curtin, 2005; Mulliken et al., 2007; Unrau & Grinnell, 2005). Part of this training includes clinical work with people in need of physical, mental, and/or emotional treatment. Research informs this treatment and is therefore necessary to understand and produce in each of these professional disciplines.

Clinical work in each of these professions relies upon evidence-based interventions. Clinical research informs these practices and is an essential component of clinical training. Therefore, discussions in all of these fields exist about how to teach students to become competent practitioners who utilize research in clinical practice.
Discussions about how to develop students’ research skills to increase scholarly productivity also exists within the professional literature (Kahn, 2001; Maier & Curtin, 2005; Mulliken et al., 2007; Unrau & Beck, 2004).

A growing concern has been raised about the lack of scholarly productivity in these clinical professions. As a result the research training environment has received attention in the recent professional literature. Unrau and Beck (2004) posit that before changes can occur in research training curricula, a deeper understanding of the research training environment, including how students learn research skills is needed. Part of the research training environment includes the development of research self-efficacy (Kahn, 2001; Maier & Curtin, 2005; Mulliken et al., 2007). Learning about what contributes to research self-efficacy in each of these professions similar to counseling can inform investigations on the research self-efficacy of Counselor Education and Supervision doctoral students and ultimately inform future research training practices.

**Research Self-Efficacy and Statistics Anxiety**

Although there are many aspects to research, students’ perceptions of statistics has received much attention in the research literature. Specifically, statistics anxiety has been discussed and empirically studied within the college student population. Based on these studies (Baloglu, 2003; Obwuegbuzie, 2000; 2003; 2003; 2004), one may infer that statistics anxiety may contribute to the hesitancy some counseling students may have toward research in general. Therefore, a discussion of statistics anxiety’s role in research self-efficacy is worthy of discussion. Empirically based studies on statistics anxiety specific to the counseling profession are again non-existent, yet it is discussed and empirically studied in other professions.
Cruise et al. (cited in Baloglu, 2003) described statistics anxiety “as the feeling of anxiety encountered when taking a statistics course or doing statistical analyses; that is gathering, processing, and interpreting” (p. 856). Understanding statistics and the application of statistics is vital to being able to be both a consumer and producer of quantitative research. If students find courses in research and statistics to be anxiety producing this could hinder their development as future researchers because statistics is a component of research. Onwuegbuzie (2003) explains that statistics anxiety is often coupled with research anxiety. Research anxiety is the nervousness one feels when exposed to any component of research. For example, this may occur when a student is taking a research methods course which may not even involve statistics. Research anxiety has been shown to have a negative impact on academic performance (Onwuegbuzie, 2003).

Baloglu (2003) found that student anxiety levels differed depending upon the student’s age. Older students were found to have significantly higher test and class anxiety than younger students although older students found more usefulness or relevance in understanding statistics. Students may also find the use of computer-based statistical programs difficult to navigate due to their unfamiliarity with the technology (Jiao & Onwuegbuzie, 2004). The relationship between gender and statistics anxiety has varied. Evidence supports the notion that a student’s experience with math correlates with statistics anxiety (Baloglu, 2003). In addition, the following variables have been associated with statistics anxiety: the student’s perception of the relevance of statistics, interpretation anxiety, test and class anxiety, computational self-concept, fear of asking for help, and fear of statistics teachers (Baloglu, 2003; Onwuegbuzie, 2003; 2004).
Statistics anxiety seems to contribute more to difficulties in statistics courses than an individual’s aptitude (Baloglu, 2003), thus calling into question what are the most effective ways for statistics teachers to reduce this barrier to learning.

Based on the information in theses studies, one may infer that students entering into Counselor Education and Supervision doctoral programs may feel nervous about the research courses they must take. This may be because students have not learned how to produce research during their masters programs. They may have come from programs where research methods, statistics, and measurement were not focused upon as much as clinical competencies. Therefore students may not have had much exposure to conducting research prior to entering the doctoral program. In particular, anxiety around statistics is common for students taking quantitative methods and statistics courses (Onwuegbuzie, 2003; 2004). Due to this anxiety some students may be more inclined to participate in research methods that do not involve quantitative foundations.

**Self-Efficacy Applied to Clinical Counseling and Supervision**

Although the concept of self-efficacy has not been applied in relation to CES doctoral students’ research skills, this concept has been used to study counseling clinical skills and counseling supervision (Barnes, 2004; Koch et al., 2004; Tang, et al, 2004). A strong sense of self-efficacy can enhance a counselor’s performance and overall effectiveness in a clinical setting (Daniels & Larson, 2001; Lent & Brown, 2008; Unrau & Grinnell, 2005). Confidence may enhance a counselor’s ego strength which can contribute to effective counseling action during the therapeutic process. Counselors with high clinical self-efficacy approach difficult tasks as challenges to be mastered rather than as threats to be avoided (Barnes, 2004). Such an efficacious outlook fosters intrinsic
interest and deep engrossment in activities. Self-efficacious counselors set themselves challenging goals and maintain a strong commitment to them. They heighten and sustain efforts in the face of failure. They quickly recover their sense of efficacy after failures or setbacks. They attribute failure to insufficient effort or deficient knowledge and skills which are acquirable. They approach threatening situations with assurance that they can exercise control over them. Such an efficacious outlook produces personal accomplishments, reduces stress, and lowers vulnerability to depression (Barnes, 2004; Bandura, 1986, Urbani et al., 2002).

Urbani et al. (2002) indicated that counselors-in-training with high clinical self-efficacy have been shown to experience more positive expectancies and self-evaluations and also fewer anxieties. Increasing one’s self-efficacy in relation to counseling and thus decreasing anxiety is considered important because anxiety may lead to impaired clinical judgment and performance. Leach and Stolttenberg (1997) posit that self-efficacy and the accompanying reduction in anxiety could be enhanced by mastery of counseling skills. Daniels and Larson (2001) suggested that enhancing counseling self-efficacy is an effective way to train counselors and reduce counseling anxiety.

Assessment tools may be used to learn about a student’s clinical and supervision self-efficacy. For example, the Counselor Supervisor Self-Efficacy Scale can be used (Daniels & Larson, 2001) during supervision to help counselor trainees evaluate their confidence in using clinical skills. Trainees are then able to obtain insight into their sense of clinical self-efficacy. Assessing Counselor Education and Supervision doctoral students research self-efficacy can be done in the same way with an instrument specific to measuring the construct. Just as counseling students can learn about their sense of
clinical and supervisory self-efficacy, CES doctoral students can learn about their sense of research self-efficacy.

**Research and Counselor Education and Supervision**

A brief discussion of how research is defined within the counseling profession is needed to begin applying the concept of self-efficacy to research within the counseling field. Leedy and Ormrod found the definitions and interpretations of the word research have varied over the years (as cited in Gladding, 2004). Barkley’s definition (as cited in Gladding, 2004) is the best to date, “Research is the systematic collection, organization, and interpretation of observations in order to answer questions as unambiguously as possible” (p. 298). Creswell (2005) has also helped describe research in the counseling profession by defining the skills needed to conduct both quantitative and qualitative research.

Although very little empirical data exists on research self-efficacy within the counseling profession, a discussion on the topic of research within the counseling field has been going on for many years (Gladding, 2004). Some of the discussion in the professional counseling literature has focused specifically on school counselors and research (Dimmit et al., 2005; Robertson, 1998), counselor training and research (Atieno Okech, 2006; Auxier et al., 2003; Bard et al., 2000; Buser, 2008, Carlson et al., 2006; Fong & Malone, 1994; Gladding, 2004; Haag Granello, 2007; Henriksen et al., 2008; Kline & Farrell, 2005; Koch et al., 2004; Payne, 1999; Ramsey et al., 2002; Reisseter et al., 2004; Smaby, 1997; Smaby et al., 2001, 2002 ), professional identity and research (Calley & Hawley, 2008; Lanning, 1990; West et al., 1990), and the overall importance and quality of research publication in the counseling field (Barrio et al., 2008; Black &...
The distinction between masters and doctoral level counseling students is not always delineated; therefore, the predominant themes in the counseling literature will be presented in this section regardless of the presumed level of counselor training being described. These discussions highlight the need for studying elements of the research training environment, including research self-efficacy, within counseling training programs.

Many authors (Bailey, 1999; Bard et al., 2000; Black & Helm 2009; Crockett et al., 2010; Fong, 1994; Kline, 2003; Lanning, 1990; Ramsey et al., 2002, Smaby et al., 2002) acknowledge that research plays an essential role in the counseling field. Counselor Educators and Supervisors must address the way to prepare self-efficacious researchers as an important aspect of counselor training. Counselor Education and Supervision faculty have a responsibility to train doctoral students in becoming both competent and confident in their clinical and research skills. Even though a large body of research exists on clinical self-efficacy, the same cannot be said about research self-efficacy within the counseling field (Barnes, 2004; Koch et al., 2004; Tang et al, 2004).

Counselor Education and Supervision programs seek to enhance counselor identity and the professional development of counseling students (Auxier et al., 2003; Calley & Hawley, 2008; Lanning, 1990; West et al., 1990). Part of this identity involves forming an identity as a person who has acquired advanced and specialized training in the field of counseling research. Fostering a sense of research self-efficacy versus anxiety in counseling students may be one way to help encourage students to pursue research opportunities (Onwuegbuzie, 2003).
Conducting research may seem intimidating to many doctoral students in Counselor Education and Supervision programs (Gladding, 2004). Many CES doctoral students may have limited exposure to research because masters-level research courses tend to prepare students to be consumers and not producers of research (Reisetter et al., 2004). Counselor Education and Supervision doctoral students may find the required doctoral research courses such as statistics and research design intimidating as well (Gladding, 2004; Onwuegbuzie, 2000; 2003; 2004). Therefore, understanding how Counselor Education and Supervision programs can reduce this anxiety and foster a sense of research self-efficacy is at least desirable if not necessary.

Some counseling students do not want to participate in research due to fear and anxiety about the process (Gladding, 2004). Many counseling students may experience trepidation in regard to research. Reisetter et al. (2004) suggest “this disengagement seems related to masters and doctoral training in research, the identity of counselors as practitioners, and the idea that professional practice is disconnected from research” (p. 3). If counseling students do not see the relevance for understanding and producing research it makes sense that this is not a focus of interest for many students. Currently counseling programs tend to place an emphasis on students becoming practitioners, which according to Reisetter et al. (2004) seems to be more compatible with the attitudes of students entering counseling programs as well as with the satisfaction level students’ gain from focusing on clinical competencies.

Many counseling students may feel that conducting research is unrelated to the work they will one day be doing and it may not be relevant in their place of employment. Discussing research among counseling students and counselors has also been found to
“evoke a negative emotional reaction of fear, anxiety, and even disdain” (Fall & VanZandt, 1997, p. 2) for the process. Other students may share these feelings (social persuasion) which can create a barrier to establishing an educational environment that supports students becoming self-efficacious researchers. Often a distinction is not made between masters and doctoral students’ perceptions of research which is why this author intends to specifically study doctoral Counselor Education and Supervision students’ perceptions of their confidence in conducting research activities.

Atieno Okech et al. (2006) highlight the growing concern within the counseling field about the quality of research being produced by counseling professionals. Specifically, the authors note concerns about the number of flawed research-based manuscript submissions to the Counselor Education and Supervision journal. Atieno Okech et al. (2006) note one possibility for this low quality of research-based work is linked to the quality of the research training counselors receive. Bard et al. (2000) and Kahn (2000) explain how socio-cognitive variables such as research self-efficacy contribute to the research training environment.

The type and quality of research mentoring students receive during graduate school also seems to play a role in future research productivity (Bard et al., 2000; Kahn, 2001). To this author’s knowledge, no research exists within the counseling field on the type of mentoring which may best enhance the research training environment, including enhancing students’ research self-efficacy. Buser (2008) also states the research on counselor training is inconclusive due to flawed design and methods. He posits improvement in research is needed in order to improve understanding of counseling clinical competencies and other counseling related activities.
Reisetter et al. (2004) acknowledge the lack of research activity within the field of counseling has been a concern for many counseling professionals. Specifically, a disconnect seems to exist between the research training in Counselor Education and Supervision doctoral programs and the actual output of research by doctoral students and Counselor Educators and Supervisors (Kline & Farrell, 2003; 2005). Several reasons could account for this observation. Uncertainty about the role of research in the lives of counselors and the clients they serve, a lack of interest in research among counseling students, limited understanding of or exposure to research methods, and the absence of confidence in one’s own research abilities (Gladding, 2004) are all possible causes for a shortage of research carried out by counseling professionals in general. Investigation is needed on this topic in order to uncover with more clarity all the reasons why counseling students are uncertain about their research identities.

The school counseling literature has addressed the topic of research as well. In 1990, Deck and Cecil discussed the moral and ethical responsibility school counselors have for producing research in the field. They further address the necessity of research for the advancement of the profession. The school counseling profession will not move forward without counselors taking responsibility to research the effectiveness of their goals, roles, and functions within the schools (Deck & Cecil, 1990). In addition, these authors cited the Ethical Standards of the then American Association for Counseling and Development which stated counselors have an obligation to influence the advancement of the profession through practices, teaching, services, and research. Additionally, Deck and Cecil (1990) explain counselors also must be accountable for their work whether that is in schools or agency settings.
The lack of research productivity in the school counseling profession is a major barrier to the advancement of the profession. Deck and Cecil (1990) decided to investigate factors that may contribute to this lack of research productivity by school counselors. In general, the authors discovered counselors tend to view research as an activity to be done by someone else. A lack of understanding about how research logically can influence the profession as well as how research can be related to direct services with clients was a common view held by the school counselors in this study. The investigators also found that American School Counseling Association (ASCA) leaders perceived that most school counselors believed research to be an inappropriate professional activity. The ASCA leaders expressed doubt about being able to change this belief in the majority of current school counselors. It is left to the Counselor Educators and Supervisors who are training a new generation to enter the field to change this perception. One way to do that may be to enhance their research self-efficacy through exposure and practice.

Just as Deck and Cecil described in 1990, Sabella et al. (2006) discuss that historically many counselors have based their practices on “faith and theory” (p. 412) versus research based constructs. Sabella et al. (2006) also noted much of what school counselors rely on is common sense versus what is found in the research literature for decision-making during day-to-day practice. The ASCA National Model (ASCA, 2008) has helped the school counseling profession acknowledge the continued importance of conducting research in addition to the importance of accountability. ASCA coordinated the first research summit during the 2003 annual ASCA convention. This led to the development of ways to strategically incorporate research activities into the activities of
professional school counselors and The Center for School Counseling Outcome Research was established in January, 2003.

These types of activities help counselors organize and better understand where the profession stands in regard to research. They are an opportunity for the counseling profession to develop and maintain quality research standards and practices that are known to be necessary for the ongoing development of the field. One of the many professional roles doctoral trained Counselor Educators and Supervisors have is to train future masters and doctoral counseling students in research. Agreement exists throughout the counseling literature that conducting research is an important professional role. Therefore Counselor Educators and Supervisors who have a strong sense of research self-efficacy may be able to better train future generations of counselors in research related activities. One way to begin generating a body of data on this topic is to study current perceptions of Counselor Education doctoral students’ research self-efficacy.

**Counselor Education and Supervision Doctoral Research Training**

Currently doctoral students in Counselor Education and Supervision are trained in both quantitative and qualitative methods (CACREP, 2009). Students need to have an understanding of both for counseling to continue developing as a profession (Bailey, 1999; Bard et al., 2000; Deemer, 2010; Holden et al., 1999; Kahn, 2001; Mulliken et al., 2007; Phillips, 1994; Unrau & Beck, 2004, Unrau & Grinnel, 2005). CACREP (2009) sets a standard for types of research to be mastered, “research methods such as qualitative, quantitative, single-case designs, action research, and outcome-based research” (p. 14). Because a high value is placed on inquiry and outcome research,
counselors need to be able to show that what they do is effective. This is important to understanding situations and people with whom counselors work in their practices. CACREP specifically outlines the research and assessment requirements for doctoral students in the counseling accreditation standards (CACREP, 2009).

According to Reisetter et al., (2004) Counselor Education and Supervision programs have traditionally focused on the positivist paradigm used within quantitative studies. Research conducted in this fashion may be difficult to relate to the work students are doing in their classes and in the field when the focus of the research is on complex designs and statistical procedures. It is imperative for students to learn how to make this connection as well as discover how to use qualitative research methods in order to continue advancing the field (Reisetter et al., 2004; Gladding, 2004).

Atieno Okech et al. (2006) surveyed Counselor Education and Supervision faculty members to learn how they perceived their research training. Differences in perception existed based upon the faculty members’ year of graduation and the degree granting institution. Recent graduates more frequently reported learning both quantitative and qualitative methods. Graduates from several years earlier reported little, if any qualitative research training. Differences in research training occurred depending upon the degree granting institution. This may be due to how different institutions focus on one research method. CES faculty surveyed in this study were in agreement that research-specific mentoring is needed in training programs.

Uncertainty about the role of research in the professional lives of counselors may be a barrier to learning the research process. This implies a need for training future generations of both community and school counselors in the importance of research to
the profession as well as how to conduct research in both academic and applied settings. Presumably, Counselor Educators and Supervisors who are confident in their research abilities will be better able to train future generations of counselors.

**Counselor Education and Supervision Research Self-Efficacy**

To date, one study exists within the Counselor Education and Supervision literature on research self-efficacy (Lambie & Vaccaro, 2011). A cross-sectional, correlational research design was used to investigate the relationship between research self-efficacy, the research training environment, and research interest among Counselor Education and Supervision students in CACREP-accredited programs. The Research Self-Efficacy Scale (RSES) was the instrument used to assess this construct among CES doctoral students. The study revealed no significant relationships between age, counseling specialty, career aspirations and research self-efficacy. A significant relationship was found between the participants’ research interest and research self-efficacy and scholarly productivity and research self-efficacy. In addition, third year doctoral students reported having higher levels of research self-efficacy than 1st and 2nd year CES doctoral students. The researchers also call attention to the need for further empirical investigation of the Counselor Education and Supervision research training environment which includes research self-efficacy (Lambie & Vaccaro, 2001).

**Summary**

This chapter has provided an overview of the relevant literature related to the topic of research self-efficacy among CES doctoral students in CACREP-approved programs. To date, only one study has been presented in the counseling literature. Although many authors, including the editors of the *Counselor Education and*
Supervision journal, have addressed the importance of research for the ongoing practices of counselors and the advancement of the counseling profession.

Primary tenets of Bandura’s self-efficacy theory were presented. These tenets offer an explanation of how mastery experiences, social persuasions, vicarious experiences and physiological states influence self-efficacy and relate to counselor research training. Highlights of how self-efficacy theory has been applied to counselor clinical and supervision training were explored and a rationale for applying the concept to research was discussed. Other allied professions have studied research self-efficacy, thus providing another rationale for studying this topic among Counselor Education and Supervision doctoral students.
Chapter Three

Method

This chapter explains the method that was used to investigate the perceived research self-efficacy of doctoral students in CACREP-accredited Counselor Education and Supervision (CES) programs. The purpose of the study was to learn about which factors (age, gender, number of completed research training credit hours, career aspirations, and enrollment status) predict the research self-efficacy of CES doctoral students. In addition, the purpose of the study was to gather information about the educational backgrounds and research related experiences of the participants. Specifically, the following research questions were addressed:

1. What is the overall research self-efficacy reported by doctoral students in CACREP-accredited Counselor Education and Supervision programs?

2. Does the number of research training credit hours completed by doctoral students in CACREP-accredited Counselor Education and Supervision programs predict doctoral students’ research self-efficacy as measured by the CRAI?

   Null hypothesis: There will be no statistically significant relationship between research self-efficacy and the number of research training credit hours completed by doctoral students in CACREP-approved Counselor Education programs.

3. Does the gender of Counselor Education and Supervision doctoral students in CACREP-accredited programs predict research self-efficacy as measured by the CRAI?
Null hypothesis: There will be no statistically significant relationship between gender of doctoral students in CACREP-approved Counselor Education programs and the students’ perceived research self-efficacy.

4. Does the age of Counselor Education and Supervision doctoral students in CACREP-accredited programs predict research self-efficacy as measured by the CRAI?
Null hypothesis: There will be no statistically significant relationship between age of doctoral students in CACREP-approved Counselor Education programs and the students’ perceived research self-efficacy.

5. Does the career aspiration (practice, school, community, or academia) of Counselor Education and Supervision doctoral students in CACREP-accredited programs predict research self-efficacy as measured by the CRAI?
Null hypothesis: There will be no statistically relationship between career aspirations (practice, school, community, academia) of doctoral students in CACREP-approved Counselor Education programs and the students’ perceived research self-efficacy as measured by the CRAI.

6. Does the enrollment status (part-time or full-time) of Counselor Education and Supervision doctoral students in CACREP-approved programs predict research self-efficacy as measured by the CRAI?
Null hypothesis: There will be no statistically significant relationship between a Counselor Education doctoral student in a CACREP-approved doctoral program enrollment status (part or full time) and the student’s research self-efficacy as measured by the CRAI.
Variables

The dependent or criterion variable was research self-efficacy as measured by the Clinical Research Appraisal Inventory (CRAI). The five independent or predictor variables were as follows: (a) the number of completed research training credit hours, (b) age, (c) gender, (d) career aspirations, and (e) enrollment status of Counselor Education and Supervision doctoral students.

Research Design

A cross-sectional survey research design was used in the study. The core feature of cross-sectional survey research is data collection at a particular point in time (Creswell, 2005). In this study, the point in time referred to when the participants were enrolled within a doctoral Counselor Education and Supervision training program. The data obtained from participants reflected their current beliefs about their research skills at the time of participation in the study. This type of survey design does not include actual behaviors rather it is used to learn about the beliefs and attitudes of participants in a study (Creswell, 2005).

This cross-sectional survey research design was used to answer the research questions about the relationship between doctoral Counselor Education and Supervision students’ research self-efficacy and the previously mentioned predictor variables. Because there was little data available on the perceived research self-efficacy of CES doctoral students, a survey was used to gather information on a variety of factors that may be related to the topic.
Participants

The participants in the study were not randomly assigned, no independent variables were manipulated, and no control group was used. Therefore, this was a non-probability, non-randomized, convenience sample. Creswell (2005) describes a core characteristic of non-probability samples as individuals possessing a common trait that the researcher wishes to investigate. In this case, the common trait was research self-efficacy. Sampling of this type is commonly used in the social sciences (Creswell, 2005, Tabachinick & Fiddel, 2001).

Participants in this study were students enrolled in CACREP-accredited Counselor Education and Supervision doctoral programs within the North Central, Southern, and Northwestern Association for Counselor Education and Supervision (ACES) regions. Currently, there are 51 accredited doctoral programs within these regions (retrieved from www.acesonline.net December 2011). These programs received accreditation from the Council for Accreditation of Counseling and Related Educational Programs (CACREP) which sets standards including specific doctoral research training requirements. Accreditation indicates that the content and quality of the counseling program has been assessed and the standards set by the profession have been attained (www.cacrep.org, retrieved June 13, 2011). Surveying participants in CACREP-approved programs yields more uniformity in the research training participants have received or will receive during their program of study, thus creating a more well-defined parameter of the sample (Tabachnick & Fidell, 2001).

Enrollment in an accredited Counselor Education and Supervision doctoral program within the North Central, Southern, or Northwestern ACES region was the only
requirement for participation in this study. Any such student was able to participate regardless of age, gender, race, ethnicity, etc. Participation was voluntary, and there were no negative consequences for participation, failure to participate, or withdrawal from participation.

**Instrumentation**

A search for a research self-efficacy instrument designed to specifically assess Counselor Education and Supervision doctoral students was conducted. No research self-efficacy inventory or general research inventory specific to Counselor Education and Supervision doctoral students was located. Although other instruments measuring this construct were found. This researcher’s search for a research self-efficacy instrument specific to counseling mirrored that of Mulliken et al.’s (2007) search for a research self-efficacy instrument specific to physicians. This section will summarize these searches and what Mulliken et al. (2007) have outlined pertaining to these assessment tools.

Research self-efficacy has been assessed in previous studies in the social sciences using the following instruments: Self-Efficacy in Research Measure (SERM; Phillips & Russell, 1994), Survey of Research Training (SORT; Royalty & Reising, 1986), Research Self-Efficacy Scale (RSES) (Greeley et al., 1989), and Research Attitudes Measure (O’Brien et al., 1998). As outlined by Mulliken et al. (2007) principle factors identified as research design skills, practical research skills, quantitative and computer skills, and writing skills were used to create the 23-item SORT. Later these principle factors were used to expand this instrument into the 33-item SERM. Both of these instruments were created for use in the field of counseling psychology. The RSE was created by Holden et al. (1999) to assess research self-efficacy in social workers and later refined by Bieschke
et al. (1993) to create the RSES for assessing research self-efficacy in doctoral students in the social sciences.

Although these instruments have some support for being reliable tools with coefficient alphas ranging from .94 to .96 (Mulliken et al., 2007), Forrester et al. (2004) determined that these tools do not adequately assess the construct of research self-efficacy. For example, the factor structures of the RSES, SERM, and Research Attitudes Measure have been studied and described as vague and difficult to replicate (Forrester et al., 2004; Bieschke, 2006). A more thorough and complete description of research self-efficacy including more specific factor structures was needed to better assess research self-efficacy (Bieschke, 2006; Mulliken et al., 2007) of professionals in the social sciences. For these reasons, Mulliken et al. (2007) created the The Clinical Research Appraisal Inventory (CRAI).

To develop the CRAI, Mulliken et al. (2007) conducted a pilot study and scale items on the inventory were subsequently created by reviewing the relevant literature, examining existing research self-efficacy measures, and obtaining knowledge from a panel of experts. Next, the researchers defined the construct of clinical research self-efficacy. They determined the construct includes ten skill sets as follows: conceptualizing a study, designing a study, collaborating with others, funding a study, planning and managing a research study, protecting research subjects and responsible conduct of research, collecting, recording, and analyzing data, interpreting data, reporting a study, and presenting a study. These skill sets comprise the CRAI’s ten subscales.

Mulliken et al. divided the questions on the CRAI into ten categories. The 92-item instrument was then factor analyzed using a principal components factor analysis
with a varimax rotation. The median internal consistency reliability, or coefficient alpha, across the ten scales was determined to be .96 and the median test-retest reliability was .88. These scores are consistent with other measures of research self-efficacy (Bieschke et al., 1993; Mulliken et al., 2007). Bivariate correlations among eight of the self-efficacy scales were reported as significant ($p < .05$). The authors of the CRAI report some construct validity through the correlational studies they conducted between the instruments’ subscales (Mulliken et al., 2007).

With these promising psychometric properties coupled with how the instrument clearly delineates several dimensions within the construct of research it was chosen by the researcher for use in this study. The ten dimensions of research outlined within the CRAI coincide with the CACREP research standards and the research competencies set forth in the ACA Encyclopedia of Counseling (American Counseling Association [ACA], 2009). Although the CRAI is a newer instrument and not specific to counseling, it more closely meets the needs of this study because it was developed to measure research self-efficacy in clinicians such as counselors and has psychometric properties that are superior to the alternatives.

**Procedures**

To answer the research questions in this study, participants were recruited from CACREP-approved Counselor Education and Supervision doctoral programs in the North Central, Southern, and Northwestern ACES regions. Initially, participants were only recruited from the North Central ACES region. Due to a low response rate, however, the participant recruitment area was expanded.
Each CACREP-accredited counseling program has a liaison listed on the CACREP website. The CACREP national office was called to verify that the website contained current contact information for the liaisons (Personal communication, March, 2011). Prior to commencement of the study, each CACREP liaison within the North Central ACES region received a preliminary overview of the project and a request for their doctoral students’ participation. Next, a description of the study, researcher contact information, and IRB information, was electronically sent to the CACREP-liaisons within the North Central ACES region. A link to SurveyMonkey, an online survey tool, was included in this communication. Additionally, participants were able to enter a drawing to win a $50.00 gift card to Barnes & Noble by emailing the researcher. Participation in the drawing was voluntary and was not connected to the responses on the surveys in any way.

Liaisons were asked to please forward the information to their students inviting them to participate. Liaisons were also asked to email a response to the researcher. Persons willing to participate were able to access SurveyMonkey and complete the informed consent for the study, the CRAI, and the demographic questionnaire. Of the 16 CACREP liaisons contacted within this ACES region, two emails were returned to the researcher with an automatic out of office reply and 4 CACREP liaisons emailed the researcher indicating the invitation to participate was forwarded to the doctoral students in their program. No response was received from the other liaisons in the region. It is unknown whether the students in these regions received the invitation to participate in the study. A reminder notice about the study was sent approximately two weeks later.
After sending the reminder email, the response rate on SurveyMonkey was low, under 20 responses. Therefore, the recruitment area was expanded to include the Southern and Northwestern regions of ACES. Thirty-three CACREP liaisons were contacted in these regions. Four emails were returned to the sender as invalid email addresses and the researcher received 3 automatic out of office replies. Of the remaining 26 CACREP liaisons, 5 replied to the researcher indicating the invitation to participate was sent to the doctoral students in their program. No response was received from the other liaisons in these regions. Therefore, it is unknown whether the doctoral students in these programs received an invitation to participate in the study. A reminder notice was sent to the liaisons in this region as well. Thank you notices were sent to the CACREP liaisons after completion of the study.

Initially, the time frame for data collection was one month. This period was extended to a month and a half due to the low response rate and expansion of the participant recruitment area. A self-selected, usable sample of sixty participants resulted.

The responses to the research questions were statistically analyzed by performing a logistic regression to determine if the predictor variables of research training hours completed, age, gender, career aspirations, and enrollment status were predictive of research self-efficacy.

**Data Analysis**

As with any statistical technique the power or ability to correctly reject the null hypothesis when it is indeed false depends upon the sample size, the alpha level, and the effect size (Cohen, 1992; Tabachnick & Fidell, 2001). Prior to the data collection, a power analysis was performed by the researcher to determine the sample size needed for
the desired statistical power level. According to Cohen, the desired statistical power level which is considered acceptable in the social sciences is .8 (meaning that there is an 80% chance of correctly rejecting the null hypothesis when it is false). The effect size for the relationship between the criterion and predictor variables of interest in this study is estimated to be moderate based on the fact that no prior research has been conducted on this topic in the counseling field. This means the anticipated effect size ($\eta^2$) is set at .15 (moderate level). The probability was set at $p \leq .05$ which is the conventional standard in the social sciences (Cohen, 1992; Creswell, 2005; Tabachnick & Fidell, 2001). Using these values for the effect size, alpha level, and power level along with five predictor variables, a power analysis was conducted that determined the minimum number of participants needed to be 91. This calculation was done using an online statistical calculator (http://www.danielsoper.com/statcalc/calc01.aspx).

In addition to reporting descriptive statistics, logistic regression analyses were performed to answer the research questions. Logistic regression is a type of statistical analysis used for the prediction of the probability of occurrence for a particular circumstance (Tabachnick & Fidell, 2001). A logistic regression was chosen because the predictor variables can be dichotomous, discrete, continuous, or mixed, thus fitting the types of variables in this study.

Although a multiple regression was considered for the data analysis because of its utility in making predictions, it was not chosen because this method does not allow for the use of varying types of variables without dummy coding (Tabachnick & Fidell, 2001). Additionally, when using a multiple regression the researcher typically enters the variables into the statistical equation in order depending upon either logical or theoretical
considerations (Tabachnick & Fidell, 2001). Because empirical evidence of how Counselor Education and Supervision doctoral students view their confidence in carrying out specific research skills was limited, no theoretical basis to assign order to the variables could be determined. A standard logistic regression does not require the predictor variables to be entered into the statistical equation in any particular order. Rather this method of analysis allows each predictor to be evaluated over and above the other predictor variables. In addition, the interactions between the predictors can be evaluated. For these reasons a logistic regression versus a multiple regression was used for the study.

To perform the logistic regression, the total CRAI scores were converted from a 0 to 10 continuous scale to two dichotomous categories (confident or not confident). These categories were created using a ¼, ¾ split as indicated by Farrington and Loeber (2000). This means the top ¼ quartile of responses (scores of 7.5 or higher on the continuous scale) were categorized as confident. The remaining ¾ quartile of responses (less than 7.5 on the continuous scale) were classified as not confident. When dichotomizing a continuous variable, Farrington and Loeber (2000) propose using this type of ¼ and ¾ split versus splitting the continuous scale in half at the mean. Splitting a continuous variable at the mean may reduce power and outliers may skew the results. These researchers indicate very little difference in results when converting a continuous variable into categories using a ¼, ¾ split. According to these authors, dichotomous variables provide relevant and user-friendly information especially for non-statistician audiences (Farrington & Loeber, 2000). Also, dichotomous variables can provide more meaningful
information than a continuous variable when using odds-ratios (Farrington & Loeber, 2000).

**Statement of Limitations**

The responses of the doctoral CES students in the sample cannot be used to
generalize to the entire population of doctoral students in CACREP-approved Counselor
Education and Supervision programs. Creswell (2005) notes this is a limitation of using
non-probability samples in survey research. Data collection from this type of sample is
appropriate when randomization is not possible or is difficult to achieve.

To the researcher’s knowledge, it is not possible to obtain a list of all the students
currently admitted to CACREP-approved Counselor Education doctoral programs,
therefore the coverage error may be another limitation to the study. According to
Creswell (2005), the coverage error can be reduced when a complete list of the sample is
used thus providing the best coverage possible to the population.

Another limitation of the study is the lack of a specific instrument designed to
assess research self-efficacy in Counselor Education and Supervision programs. The
instrument being used in this study, the CRAI, was designed outside of the counseling
field. The CRAI is also a newer instrument (Mulliken et al., 2007) and further studies
are still needed to help support the tool’s reliability and validity. The measure was also
created specifically for physicians. Perhaps in the future an instrument specifically
designed for use within the counseling profession will be developed.

**Summary**

A non-probability sample of Counselor Education and Supervision doctoral
students in CACREP-approved programs in the North Central, Southern, and
Northwestern ACES regions were surveyed to learn about which factors are predictive of their research self-efficacy. The criterion variable was research self-efficacy and the predictor variables were the following: the number of research training credit hours completed, age, gender, career aspirations (practice, school, community, academia), and enrollment status of CES doctoral students in CACREP-approved programs. The Clinical Research Appraisal Inventory (CRAI) was the instrument used in the study to measure research self-efficacy. Descriptive statistics and logistic regressions were performed to determine the relationships between the criterion and predictor variables.
Chapter Four

Results

This chapter includes both descriptive demographic data of the participants and the results of binary logistic regression analyses of the research hypotheses. Data for these analyses were obtained from the results of two surveys: a demographic questionnaire and the Clinical Research Appraisal Inventory (CRAI). These measures were posted on SurveyMonkey, a secure online data collection site. Council on Accreditation of Counseling and Related Educational Programs (CACREP) liaisons (n = 40) were contacted via email requesting assistance in distributing the SurveyMonkey link to the Counselor Education and Supervision (CES) doctoral students in their programs. Of the liaisons contacted, nine emailed the researcher confirming the invitation to participate was forwarded to the doctoral students in their program.

The researcher received a total of 81 responses on SurveyMonkey. Of those that consented to participate in the study, 81 percent of respondents completed both instruments. After screening the data, 21 participants’ responses were found to be incomplete. Ten participants did not completely answer the demographic questionnaire and an additional 11 participants did not complete the CRAI in its entirety. Therefore, the usable sample size after data screening for the quantitative analyses was 60.

Prior to commencement of the study, a power analysis was conducted to determine the number of participants needed to provide a reasonable probability of avoiding a Type II error (i.e., a false negative). The usable sample (n = 60) did not meet the optimal number of 91 participants. Although according to Peng et al. (2002), ten participants per predictor variable is adequate for performing a logistic regression. This
study investigated 5 predictor variables, therefore a minimum sample size of 50 was considered adequate to proceed with the logistic regression analysis.

The predictor variables in the study were (a) the number of research training credit hours completed, (b) gender, (c) age, (d) career aspirations, and (e) current enrollment status. Research self-efficacy as measured by the CRAI served as the criterion variable.

**Demographic Information**

Data were collected from Counselor Education and Supervision doctoral students in CACREP-accredited programs in the North Central, Southern, and Northwestern regions of the Association for Counselor Education and Supervision (ACES). A demographic questionnaire created by the researcher was used to collect these data. Because this is a pilot study, participants were asked a variety of questions about their educational background and research-related experiences.

In terms of gender, 50 participants identified as female (83.3%) and 10 participants identified as male (16.7%). The respondents’ ages ranged from 24 (3.3%) to 63 years (1.7%) with 37 (61.7%) participants reporting their age as under forty. Regarding ethnicity, 1 participant identified as Asian (1.7%), 7 participants identified as Black or African American (11.7%), 3 people identified as Hispanic or Latino (5.0%), and 1 participant (1.7%) identified as Native Hawaiian or Pacific Islander. The majority of respondents (N=43 or 71.7%) reported being White or European American. Four (6.7%) of the participants marked the Other category as their race/ethnicity and 1 person (1.7%) reported being a combination of two races/ethnicities. Specifically, this person identified as Asian, Native Hawaiian or Pacific Islander.
Table 1 below reports the frequencies, or sum of the number of instances, for gender. The percent total for each value is included. Table 2 below contains descriptive information for the participants’ ages.

Table 1

*Frequencies for Gender (n = 60)*

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>10</td>
<td>16.7</td>
</tr>
<tr>
<td>Female</td>
<td>50</td>
<td>83.3</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 2

*Descriptive Information for Age (n=60)*

<table>
<thead>
<tr>
<th>Demographic Item</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>24</td>
<td>63</td>
<td>37.35</td>
<td>11.576</td>
</tr>
</tbody>
</table>

When participants were asked to indicate the highest degree they had earned, 15 (25.0%) respondents reported receiving a Masters of Arts (MA) degree, 12 (20.0%) participants reported receiving a Masters of Science (MS) degree, and 8 (13.3%) people reported receiving a Masters of Education (MEd). Three (5.0%) respondents specified receiving a Masters degree in Psychology, 5 participants (8.3%) indicated they had received a Masters degree in Counseling, and 10 participants (16.7%) identified receiving a Masters degree, but did not indicate the type. Seven (11.7%) respondents reported earning a degree in something other than these.

Next participants were asked to report the concentration area they pursued while earning their Masters degree. Thirteen respondents (21.7%) indicated a focus in clinical
mental health counseling, 27 participants (45.0%) identified community counseling as their focus, 2 participants (3.3%) indicated a concentration in marriage, couple, and family counseling, and 1 respondent (1.7%) specified rehab counseling as the focus of their masters degree program. Seven participants (11.7%) identified school counseling as their focus and 2 people (3.3%) indicated student affairs and college counseling as their concentration area. Eight participants (13.4%) reported focusing on two or more of these specialties during their Masters level training. In addition, participants were asked to indicate whether their Masters degree program was CACREP- accredited at the time they received their degree. Of the 60 participants who answered this question, 46 (76.7%) respondents reported attending a school with a CACREP-accredited program and 14 (23.3%) participants indicated attending a school that did not have a CACREP accredited program.

Twenty-two (36.7%) participants reported participating in research with a faculty member while a student in a Masters degree program and 38 (63.3%) participants reported not participating in research with a faculty member as a Masters level student.

Participants were asked to indicate whether or not the Masters level research courses they completed were offered within their department or in another department at the university. Twenty-seven (45.0%) respondents indicated taking masters research classes outside of the department and 33 (55.0%) participants specified that the research classes they completed were internal to their department.

The researcher then asked participants to indicate the year they completed their masters degree. Answers to this question ranged from 1978 to 2011. Regarding the length of time between completion of a masters degree program and entry into a
Counselor Education and Supervision doctoral program, the participants responses ranged from no time (N=22, 36.7%) to seven years (N=5, 8.3%) passing. Forty-eight (80.0%) participants reported they did not complete a Masters thesis and 12 (20.0%) respondents indicated they completed one. Regarding the completion of an undergraduate thesis, 48 (80.0%) participants reported they did not complete a thesis and 12 (20.0%) participants reported they did. Thirty-three (55.0%) respondents indicated they did not participate with faculty in research projects during their undergraduate studies and 27 (45.0%) participants reported they did.

In terms of practice area, the majority (N=19 or 31.7%) of participants identified as Clinical Mental Health Counselors. One (1.7%) participant reported addiction counseling as his or her practice area and 1 (1.7%) person identified career counseling as his or her focus. Seven (11.7%) participants reported community counseling; 2 (3.3%) participants indicated marriage, couple, and family counseling; and 1 (2.7%) person reported rehabilitation counseling as the focus of their practice. Five (8.3%) respondents identified school counseling and 6 (10.0%) participants reported student affairs and college counseling as their practice area, while 18 (30.3%) participants specified a combination of these areas.

Eighteen (30.0%) participants indicated they were published in a counseling journal and 42 (70.0%) participants reported they had not been published. Seventeen (28.3%) participants reported being published in a journal, not specifically counseling, while 43 (71.7%) participants reported they had not been published in any journal. In terms of publication in a counseling newsletter, 36 (60.0%) participants were not published and 24 (40.0%) participants were published.
Regarding publication in a non-peer reviewed publication, 28 (46.7) participants were published and 32 (53.3%) were not published. In terms of presenting at a professional conference, the majority of participants (N=49; 81.7%) had presented and 11 (18.3%) had not. The responses varied slightly when asked whether or not participants had presented at a professional counseling conference, 45 (75.0%) people had presented and 15 (25.0%) participants had not presented. Six (10.0%) participants had participated in a journal club and 54 (90.0%) participants had not participated in this type of club. Thirty-six (60.0%) people had a current research mentor and 24 (40.0%) participants did not currently have a research mentor. In terms of a past research mentor, half of those who answered the question reported having a past mentor (N=30, 50.0%) and half (N=30, 50.0%) reported they did not have a past mentor.

Participants were asked about the number of research training credit hours completed thus far in their Counselor Education and Supervision PhD programs. Respondents reported completing between 0 and 30 hours as summarized in Table 3 below.

Table 3

*Descriptive Information for the Number of Completed Doctoral CES Research Training Credit Hours (n = 60)*

<table>
<thead>
<tr>
<th>Demographic Item</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Research Training Credit Hours</td>
<td>0</td>
<td>30</td>
<td>8.68</td>
<td>6.193</td>
</tr>
</tbody>
</table>

When asked about current enrollment status, 21 (35.0%) participants reported being part-time students and 39 (65.0%) respondents specified full-time student status.
Regarding the participants’ career aspirations, 1 (1.7%) respondent reported aspiring to be a Community Counselor, 2 (3.3%) participants reported aspirations of becoming a school counselor, and 6 (10.0%) participants reported a career aspiration of clinical practice. The majority, 23 (38.3%) participants, reported a career aspiration of academia and 19 (31.7%) participants reported their career aspiration as combination of clinical practice and academia. Three (5.0%) participants indicated they aspired to a career in community counseling and academia, 1 (1.7%) participant indicated a career aspiration of both community and school counseling, and 4 (6.7%) respondents reported a career aspiration in community counseling, clinical practice, and academia. One (1.7%) participant specified a career aspiration in all four categories (community counseling, school counseling, clinical practice, and academia). Table 4 shows the frequencies for career aspirations and Table 5 reports this information for enrollment status.

Table 4

*Frequencies for Career Aspirations (n=60)*

<table>
<thead>
<tr>
<th>Career Aspirations</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Counselor (CC)</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>School Counselor (SC)</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td>Clinical Practice (CP)</td>
<td>6</td>
<td>10.0</td>
</tr>
<tr>
<td>Academia (A)</td>
<td>23</td>
<td>38.3</td>
</tr>
<tr>
<td>CP/A</td>
<td>19</td>
<td>31.7</td>
</tr>
<tr>
<td>CC/A</td>
<td>3</td>
<td>5.0</td>
</tr>
<tr>
<td>CC/CP/A</td>
<td>4</td>
<td>6.7</td>
</tr>
<tr>
<td>CC/SC</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>CC/SC/CP/A</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 5

*Frequencies for Enrollment Status (n=60)*

<table>
<thead>
<tr>
<th>Enrollment Status</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part-time</td>
<td>21</td>
<td>35.0</td>
</tr>
<tr>
<td>Full-time</td>
<td>39</td>
<td>65.0</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The range of time participants reported being in the Counselor Education and Supervision doctoral program ranged from 0 up to 1 year (N=11; 18.3%) to over 8 years (3 participants; 5.0%). Forty-nine (81.7%) participants reported taking or planning to take doctoral research courses outside of the department and 11 (18.3%) participants reported they did not take or will not take doctoral research courses outside of the department.

Finally, participants were asked to categorize their overall confidence in their research skills. Eight people (13.3%) identified as not confident, 23 (38.3%) participants identified as somewhat confident, 24 (40.0%) participants identified as confident, and 5 (8.3%) participants identified as very confident.

**Statistical Analysis Results**

**Research Question One**

The first research question was: What is the overall research self-efficacy reported by doctoral students in CACREP-accredited Counselor Education and Supervision programs? Data regarding the participants’ reported research self-efficacy were collected by both measures used in this study. Participants were asked to check one of four
categories on the demographic questionnaire regarding their current overall confidence in their research skills (not confident, somewhat confident, confident, or very confident).

Each participant also received a total score on the CRAI resulting in a mean score of 589.68 with a standard deviation of 164.72 for this measure. As demonstrated in the table below, the majority of participants were not confident in their research skills as measured by the CRAI.

Table 6

*Frequencies of Overall Confidence and CRAI score*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Confidence</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRAI Score</td>
<td>No</td>
<td>41</td>
<td>68.3</td>
<td>68.3</td>
<td>68.3</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>19</td>
<td>31.7</td>
<td>31.7</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>100.0</td>
</tr>
<tr>
<td>Demographic Questionnaire</td>
<td>Not</td>
<td>8</td>
<td>13.3</td>
<td>13.3</td>
<td>13.3</td>
</tr>
<tr>
<td></td>
<td>Somewhat</td>
<td>23</td>
<td>38.3</td>
<td>38.3</td>
<td>51.7</td>
</tr>
<tr>
<td></td>
<td>Confident</td>
<td>24</td>
<td>40.0</td>
<td>40.0</td>
<td>91.7</td>
</tr>
<tr>
<td></td>
<td>Very</td>
<td>5</td>
<td>8.3</td>
<td>8.3</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>60</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

A significant relationship was found at the $p \leq 0.01$ level between overall confidence on research skills as reported on the demographic questionnaire and the CRAI score. This means a significant relationship exists between the participants’ responses on demographic questionnaire and the CRAI. Although participants’ reported higher confidence levels on the demographic questionnaire with 48.3 percent falling into the confident and very confident categories versus 31.7 percent of participants scoring as confident on the CRAI.
Table 7

*Overall Confidence and Total CRAI Score Correlation*

<table>
<thead>
<tr>
<th>Demographic Variable</th>
<th>Statistic</th>
<th>Total CRAI Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Confidence in Research Skills</td>
<td>Pearson Correlation</td>
<td>.258*</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.046</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>60</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the .01 level (2-tailed).
*. Correlation is significant at the .05 level (2-tailed).

**Research Question Two**

The second research question was: Does the number of research training credit hours completed by doctoral students in CACREP-accredited Counselor Education and Supervision programs predict doctoral students’ research self-efficacy as measured by the CRAI? Logistic regression predicts the logit transformation of the value assigned to the criterion variable of Counselor Education and Supervision doctoral students’ research self-efficacy (Peng et al., 2002). In this case, the logistic model predicts the logit of perceived research self-efficacy from the total number of research training credit hours completed by doctoral students. The logit is the natural logarithm of odds of a dependent variable occurring and the odds ratio is the probability of a dependent variable occurring (Tabachnick & Fidell, 2001). In this case, the odds ratio is the probability of perceived confidence (versus no confidence) in research skills occurring by increasing the number of doctoral level research training courses. The table below indicates this predictor variable was statistically significant as stated by the regression equation: $\chi^2 (5, n = 60) = 7.579, p < .001$. The odds ratio or $e^b$ was greater than one and the Wald test, a measure of the significance of the regression coefficient (B), resulted in a high value which further supported statistical significance for this predictor variable (Peng et al., 2002). This
means the more research credit hours completed the more confident participants’ became in their research skills.

Table 8

*Summary of Logistic Regression for Research Question Two*

<table>
<thead>
<tr>
<th>Omnibus Tests of Model Coefficients</th>
<th>( \chi^2 )</th>
<th>df</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.579</td>
<td>5</td>
<td>.006</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>S.E.</th>
<th>( e^b )</th>
<th>Wald</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Training Credit Hours</td>
<td>.140</td>
<td>.055</td>
<td>1.150</td>
<td>6.387</td>
<td>.011</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.376</td>
<td>1.954</td>
<td>.253</td>
<td>.496</td>
<td>.481</td>
</tr>
</tbody>
</table>

**Research Question Three**

The third research question was: Does the gender of Counselor Education and Supervision doctoral students in CACREP-accredited programs predict research self-efficacy as measured by the CRAI? Of the sixty participants who completed both measures, 10 respondents were male and 50 respondents were female. The table below highlights the participants’ perceived research self-efficacy as categorized by gender.

Table 9

*Frequencies for Research Question 3 (n = 60)*

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>Confident in Research Skills</th>
<th>Percentage correct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Step 1 Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Female</td>
<td>33</td>
<td>17</td>
</tr>
<tr>
<td>Overall percentage</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: The cut value is .500

In this case, the regression coefficient (B) indicates the direction of the relationship between gender and the logit of research self-efficacy. When B is smaller
than 0, smaller values are associated with smaller logits of \( Y \) (Peng et al., 2002). This means the probability or the odds ratio of gender predicting research self-efficacy was not supported as the B value was less than zero (Peng et al., 2002). The regression equation of \( \chi^2 (1, n = 60) = .808, p > .05 \) stated no statistical significance was indicated for gender predicting the research self-efficacy of Counselor Education and Supervision doctoral students. This means gender was not predictive of the participants’ confidence in their research skills.

Table 10

**Summary of Logistic Regression for Research Question Three**

<table>
<thead>
<tr>
<th>Omnibus Tests of Model Coefficients</th>
<th>( \chi^2 )</th>
<th>df</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.808</td>
<td>1</td>
<td>.369</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>S.E.</th>
<th>( e^b )</th>
<th>Wald</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>.521</td>
<td>.911</td>
<td>1.683</td>
<td>.327</td>
<td>.567</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.376</td>
<td>1.954</td>
<td>.253</td>
<td>.496</td>
<td>.481</td>
</tr>
</tbody>
</table>

**Research Question Four**

The fourth research question was: Does the age of Counselor Education and Supervision doctoral students in CACREP-accredited programs predict research self-efficacy as measured by the CRAI? The ages of the participants in the sample (\( n = 60 \)) ranged from 24 years of age to 63 years of age. This continuous predictor variable approached, but did not achieve, statistical significance as described by the regression equation, \( \chi^2 (1, n = 60) = .055, p > .05 \). The \( p \) value was less than \( p < .05 \) and the regression coefficient (B) was small. Both of these findings do not support the variable
of age in predicting research self-efficacy (Peng et al., 2002). Also, a one unit change in age would need to be meaningful and relevant for statistical significance to be found. This means age did not predict the participants’ confidence in research skills.

Table 11

Summary of Logistic Regression for Research Question Four

<table>
<thead>
<tr>
<th>Omnibus Tests of Model Coefficients</th>
<th>$\chi^2$</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.055</td>
<td>1</td>
<td>.815</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>S.E.</th>
<th>$e^b$</th>
<th>Wald</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Training Credit Hours</td>
<td>-.026</td>
<td>.028</td>
<td>.974</td>
<td>.868</td>
<td>.352</td>
</tr>
<tr>
<td>Constant</td>
<td>-.1376</td>
<td>1.954</td>
<td>.253</td>
<td>.496</td>
<td>.481</td>
</tr>
</tbody>
</table>

Research Question Five

The fifth research question was: Does the career aspiration (practice, school, community, or academia) of Counselor Education and Supervision doctoral students in CACREP-accredited programs predict research self-efficacy as measured by the CRAI? Respondents were asked to choose a category (clinical practice, community, school, or academia) describing their career aspirations on the demographic questionnaire. Some respondents selected more than one category. As a result, an additional “combined” category was added to the career aspiration predictor variable. This category was coded as follows: 0 = Community Counselor, 1 = School Counselor, 2 = Clinical Practice, 3 = Academia, and 4 = Combined. The table below presents a summary of the frequency of responses to this question and a crosstabulation between these responses and the CRAI score.
Table 12

Frequencies and Crosstabulation of Career Aspirations and CRAI Score

<table>
<thead>
<tr>
<th>Career Aspiration</th>
<th>No</th>
<th>Yes</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Confident</td>
<td>Confident</td>
<td></td>
</tr>
<tr>
<td>Community Counselor</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>School Counselor</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Clinical Practice</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Academia</td>
<td>15</td>
<td>8</td>
<td>23</td>
</tr>
<tr>
<td>Combined</td>
<td>20</td>
<td>8</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>19</td>
<td>60</td>
</tr>
</tbody>
</table>

The career aspiration predictor variable was not found to be statistically significant as indicated by the regression equation, $\chi^2 (1, n = 60) = .054, p > .05$. Both the regression coefficient ($B = -.030$) and the low Wald test value support this conclusion (Peng et al., 2002). This means the career aspiration of Counselor Education and Supervision doctoral students was not found to predict their research self-efficacy.

Table 13

Summary of Logistic Regression for Research Question Five

<table>
<thead>
<tr>
<th>Omnibus Tests of Model Coefficients</th>
<th>$\chi^2$</th>
<th>df</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.054</td>
<td>1</td>
<td>.815</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>S.E.</th>
<th>$e^b$</th>
<th>Wald</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career Aspiration</td>
<td>-.030</td>
<td>.354</td>
<td>.970</td>
<td>.007</td>
<td>.932</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.376</td>
<td>1.954</td>
<td>.253</td>
<td>.496</td>
<td>.481</td>
</tr>
</tbody>
</table>

Research Question Six

The sixth research question was: Does the enrollment status (part-time or full-time) of Counselor Education and Supervision doctoral students in CACREP-approved
programs predict research self-efficacy as measured by the CRAI? Of the sixty respondents who answered this question, 21 indicated they were part-time students and 39 participants reported being full-time students in the Counselor Education and Supervision doctoral program. Part-time students were coded as 0 and full-time students were coded as 1 for the prediction analysis.

Table 1

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>Criterion Variable</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Confident in Research Skills</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Part-time</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>Full-time</td>
<td>27</td>
<td>12</td>
</tr>
<tr>
<td>Overall percentage</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The low value of the regression coefficient and Wald test suggest non-significance for this predictor variable. Also, a less than one odds ratio ($e^b$) means odds are low for a particular event occurring (Tabachnick & Fidell, 2001). In this case, an odds ratio of less than one means there is a low likelihood of enrollment status predicting research self-efficacy. These findings limit the meaningfulness of the regression equation, $\chi^2 (1, n = 60) = .041, p > .05$. This means the enrollment status of CES doctoral students did not predict their research self-efficacy. Table 14 below summarizes the findings.
Table 15

*Summary of Logistic Regression for Research Question Six*

<table>
<thead>
<tr>
<th>Omnibus Tests of Model Coefficients</th>
<th>$\chi^2$</th>
<th>df</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.041</td>
<td>1</td>
<td>.839</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>S.E.</th>
<th>$e^b$</th>
<th>Wald</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Training Credit Hours</td>
<td>-.125</td>
<td>.668</td>
<td>.883</td>
<td>.035</td>
<td>.852</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.376</td>
<td>1.954</td>
<td>.253</td>
<td>.496</td>
<td>.481</td>
</tr>
</tbody>
</table>

**Summary**

Descriptive demographic data about the participants’ educational backgrounds and research related experiences were presented in this chapter. Next, each research question was answered through statistical analyses. In terms of overall research self-efficacy, the majority of respondents were not confident in their research skills as measured by the Clinical Research Appraisal Inventory (CRAI). The participants’ responses on the demographic questionnaire were symmetrically distributed. Approximately half of the responses were categorized as not confident or somewhat confident. The other half of responses fell into the confident and very confident categories. Based on the logistic regression results, the number of research training credit hours completed by the participants was a significant predictor of research self-efficacy as measured by the CRAI. No significant relationships were found between the remaining predictor variables (age, gender, enrollment-status, and career aspirations) and the CRAI scores of the participants. The next chapter will address the implications of these findings, the limitations of the study, and recommendations for future research on...
the research self-efficacy of Counselor Education and Supervision doctoral students in CACREP-accredited programs.
Chapter Five
Discussion

Research plays a key role in the professional training of Counselor Education and Supervision (CES) doctoral students. CACREP, the counseling accrediting body, sets research standards that must be included into CES doctoral training curriculum. This curriculum includes training in both quantitative and qualitative research methodologies, design, and analysis. These classes are part of the research training environment for CES doctoral students. Research self-efficacy is also a part of the research training environment (Lambie & Vaccaro, 2011). Very little has been written, however, on research self-efficacy within the CES professional literature. Therefore, the purpose of this pilot study was to investigate what factors are predictive of research self-efficacy and to gather demographic data on the educational backgrounds and research training experiences of Counselor Education and Supervision doctoral students in CACREP-accredited programs.

The Clinical Research Appraisal Inventory (CRAI) was used to assess research self-efficacy in this study. This is the first time this comprehensive research self-efficacy assessment tool has been used within the counselor education field. In 2006, the 92-item instrument was created to thoroughly assess the construct of research self-efficacy. Preliminary evidence suggests this survey has superior psychometric properties than other instruments such as the Research Self-Efficacy Scale (RSES) (Greeley et al., 1989), Self-Efficacy in Research Measure (SERM) (Phillips & Russell, 1994), Survey of Research Training (SORT) (Royalty & Reising, 1986), and Research Attitudes Measures (O’Brien et al., 1998). Studies indicate these measures (RSES, SERM, SORT, and
Research Attitudes Measure) do not fully assess the many aspects of research (Forrester et al., 2004; Bieschke, 2006). Results obtained using these instruments have also been described as difficult to replicate within populations other than those for which they were designed to assess (Forrester et al., 2004; Bieschke, 2006). To this author’s knowledge, there is no measure specific to research self-efficacy within the counselor education profession. For these reasons the CRAI was selected to assess the construct of research self-efficacy within CES doctoral students in CACREP-accredited programs. A demographic questionnaire was also created by the researcher to gather information about the participants’ educational and research related experiences. These surveys were posted online via a secured website (http://www.surveymonkey.com).

Initially, CACREP liaisons within the North Central Association for Counselor Education and Supervision (ACES) were contacted via email requesting their assistance in recruiting participants for the study. Sixteen liaisons were contacted asking them to please forward the SurveyMonkey link to the CES doctoral students in their program. Two email addresses were invalid as they were returned to the researcher. Of those liaisons contacted, four emailed the researcher confirming they had sent the invitation to participate to the doctoral students in their program. After sending an additional reminder email to the liaisons about the study, the response rate on SurveyMonkey was low.

To increase the number of responses, the researcher expanded the participant recruitment area to include the Southern and Northwestern regions of ACES. CACREP liaisons in these regions were emailed asking for their assistance in forwarding the invitation to participate and the link to SurveyMonkey to the doctoral students in their
program. Of the 33 additional CACREP liaisons contacted, five emailed the researcher confirming they had forwarded the participation request to the doctoral students in their program. Seven emails of the 33 liaisons contacted in these regions were returned to the researcher. After sending an additional reminder notice, a total of 81 people consented to participate in the study. Of the 81 participants, 60 respondents completed both the demographic questionnaire and the CRAI and 74 participants completed the majority of the demographic questionnaire. Also, a drawing for a $50.00 gift card to Barnes and Noble was offered as an incentive for participation in the study. Participation in the drawing was voluntary and was not connected to the survey results in any way.

A power analysis was conducted prior to commencement of the study. Based on this analysis, it was determined that 91 participants were needed to create a powerful sample for the logistic regression analysis. Although Peng et al. (2002) state that 10 participants per predictor variable is adequate for performing a logistic regression. This would mean a sample size of 50 for 5 predictor variables would be adequate to conduct the prediction analysis. Based on the power analysis, however, the generalizability of the logistic regression results are limited for this study.

**Summary of Results**

There were a total of six research questions. The first research question was answered based on the descriptive data collected from the participants on both measures used in the study. The remaining five research questions and null hypotheses for each of these questions were answered with a binary logistic regression analysis.

1. What is the overall research self-efficacy reported by doctoral students in CACREP-accredited Counselor Education and Supervision programs?
As reported on the CRAI, 31.7% (N=19) of Counselor Education and Supervision doctoral students in CACREP-accredited programs were confident or self-efficacious in their research skills. As indicated on the demographic questionnaire, 40% (N=24) of the participants were confident in their research skills and an additional 8.3% (N=5) of participants identified as being very confident in these skills. This means that the students self-reported higher confidence levels on the demographic questionnaire than on the CRAI. It also indicates that over half of the respondents on each measure were not confident in their research skills.

2. Does the number of research training credit hours completed by doctoral students in CACREP-accredited Counselor Education and Supervision programs predict doctoral students’ research self-efficacy as measured by the CRAI?

Null hypothesis: There will be no statistically significant relationship between research self-efficacy and the number of research training credit hours completed by doctoral students in CACREP-approved Counselor Education programs.

The null hypothesis was rejected as the test model of the predictor variable (number of research training credit hours completed by CES doctoral students in CACREP-accredited programs) was statistically significant at the $p < .001$ level. This means the number of research training credit hours completed by Counselor Education and Supervision doctoral students in CACREP-accredited programs was predictive of the students’ research self-efficacy. As the number of completed research training credit hours increased, so did the research self-efficacy of the CES doctoral students in this study.
3. Does the gender of Counselor Education and Supervision doctoral students in
CACREP-accredited programs predict research self-efficacy as measured by the CRAI?
Null hypothesis: There will be no statistically significant relationship between gender of
doctoral students in CACREP-approved Counselor Education programs and the students’
perceived research self-efficacy.

The null hypothesis failed to be rejected as the test model of the predictor variable
(gender) was not statistically significant at the $p \leq .05$ level. This means gender did not
predict the research self-efficacy of CES doctoral students in CACREP-accredited
programs.

4. Does the age of Counselor Education and Supervision doctoral students in CACREP-
accredited programs predict research self-efficacy as measured by the CRAI?
Null hypothesis: There will be no statistically significant relationship between age of
doctoral students in CACREP-approved Counselor Education programs and the students’
perceived research self-efficacy.

The null hypothesis failed to be rejected as the test model of the predictor variable
(age) was not statistically significant at the $p \leq .05$ level. This means the age of
Counselor Education and Supervision doctoral students in CACREP-accredited programs
was not predictive of the students’ research self-efficacy.

5. Does the career aspiration (practice, school, community, or academia) of Counselor
Education and Supervision doctoral students in CACREP-accredited programs predict
research self-efficacy as measured by the CRAI?
Null hypothesis: There will be no statistically relationship between career aspirations
(practice, school, community, academia, or combined) of doctoral students in CACREP-
approved Counselor Education programs and the students’ perceived research self-efficacy as measured by the CRAI.

The null hypothesis failed to be rejected as the test model of the predictor variable (career aspiration) was not statistically significant at the $p \leq .05$ level. This means the career aspiration of Counselor Education and Supervision doctoral students in CACREP-accredited programs did not predict the students’ research self-efficacy.

6. Does the enrollment status (part-time or full-time) of Counselor Education and Supervision doctoral students in CACREP-approved programs predict research self-efficacy as measured by the CRAI?

Null hypothesis: There will be no statistically significant relationship between a Counselor Education doctoral student in a CACREP-approved doctoral program enrollment status (part or full time) and the student’s research self-efficacy as measured by the CRAI.

The null hypothesis failed to be rejected as the odds ratio ($e^b$) for the predictor variable (enrollment status) was less than one. This means the enrollment status of CES doctoral students in CACREP-accredited programs was not predictive of the students’ research self-efficacy.

**Implications**

In this study, the majority of CES doctoral students indicated they were not confident in their research skills as reported on the CRAI (68.3%). This suggests a need to learn more about how to increase research self-efficacy among CES doctoral students in CACREP-accredited programs. The conclusions from the previous sections support the notion that certain educational and research related experiences support the
development of research self-efficacy as evidenced by the significant relationship found between research training credit hours completed and research self-efficacy. However, demographic characteristics that one has little control over, such as gender and age, did not seem to influence research self-efficacy. The career aspirations and enrollment status of the participants were not found to significantly affect the students’ research self-efficacy. These findings are consistent with the results of Lambie and Vaccaro’s (2011) investigation between the variables of age and career aspirations.

CACREP, the counseling accrediting body, recognizes the importance of research and includes research and scholarship as one of the learning objectives for Counselor Education and Supervision doctoral students (CACREP, 2009; Lambie & Vaccaro, 2011). Courses in research design, quantitative methods, and qualitative methodologies are core requirements within CES doctoral programs. This researcher found the number of research credit hours completed by CES doctoral students in CACREP-accredited programs to significantly predict the students’ research self-efficacy. This is a meaningful finding because it is the first time empirical data have supported the idea that the required CES doctoral research courses do positively affect the research self-efficacy of students.

This finding also indicates a need to learn about the specific details related to research training courses that increase research self-efficacy in CES doctoral students. Determining the number of research training credit hours that begins to enhance research self-efficacy is needed. The types of activities within research courses may also be helpful in understanding what specifically relates to research self-efficacy. Activities such as lectures, discussions, workshops, in-class presentations, research evaluations,
data collection and analyses, and creating research designs could all be explored in relation to research self-efficacy.

As more research training credit hours were completed by doctoral CES students their research self-efficacy increased. This implies that exposure to research and educational activities related to research enhance research self-efficacy. With this in mind, Counselor Educators could help increase research self-efficacy in their students by intentionally incorporating research opportunities throughout CES doctoral programs. Counselor Education and Supervision doctoral students could be included in any aspect of the research process including idea formation, design and methodology, statistical procedures, data collection, and analysis. Counselor Educators could illustrate how to do this within counseling classes. By incorporating a research component into counseling courses, students could generate ideas about how to investigate the concepts being taught. This would help incorporate research ideas throughout the counseling curriculum and offer students’ opportunities to explore ways they may engage in the research process. This would expose CES doctoral students to research concepts within a practical context. Involvement in discussion and activities related to research may help CES doctoral students directly link research with one’s professional identity.

Incorporating research concepts into counseling classes provides another avenue for students to view Counselor Educators as both clinicians and researchers. This may be important because research and statistics courses are frequently not taught by counseling faculty, thus creating a disconnection between the role of counselor and researcher (Reisetter et al., 2004). The findings from this study supported this statement with 49 (81.7%) of the participants reporting they either will take or had taken doctoral researcher
courses outside of the Counseling department. Counselor Educators that engage students in discussing research concepts within counseling classes may help bridge this gap.

Involvement in collaborative research teams may also further solidify research as a component of one’s professional identity. This type of social persuasion may help doctoral students gain a deeper understanding of the role of research in the professional lives of Counselor Educators. It would also give CES doctoral students’ opportunities to participate in research within a realistic context and apply the research concepts they are learning in their research classes. All of which, may reduce anxiety surrounding research and encourage CES doctoral students to become producers of research.

Higher levels of research self-efficacy may increase motivation toward working toward a goal, such as completing a research project for presentation at a professional conference. Higher levels of research self-efficacy may also influence one’s professional identity. This identity would include confidence in conducting counseling research. Also, by enhancing research self-efficacy among CES doctoral students, anxiety surrounding research may decrease (Onwuegbuzie, 2003). In theory, CES doctoral students who graduate feeling confident in their research skills will continue on in their professional careers as confident researchers.

**Limitations**

The usable sample size (n = 60) after data screening was smaller than the number of participants recommended by a power analysis for the logistic regression. While the number of participants was smaller than recommended, it was still large enough to permit the use of logistical regression (Peng et al., 2002). In addition, the use of a non-probability sample had inherent limitations due the homogeneity within the non-
randomized group (Creswell, 2005). For these reasons, the generalizability of the findings is limited.

The researcher had no way of determining the exact number of CES doctoral students within the intended population because a complete list of students in the areas being surveyed was unavailable. Also, the researcher had no way of knowing who received the invitation to participate in the study. This may have caused some coverage error to occur (Creswell, 2005).

To obtain the sample, CACREP liaisons in the North Central ACES region were contacted via email asking them to forward information about the study to the CES doctoral students in their program. Two of the emails were returned to the researcher indicating either an invalid email address or an automatic out of office reply from the recipient. Due to the initial low response rate, the researcher expanded the participant recruitment area to include the Southern and Northwestern regions of ACES. Of these regions, seven of the emails were returned to the researcher indicating the address was invalid or the recipient was out of the office. In total, forty CACREP liaisons were contacted. Of these nine liaisons replied to the researcher indicating the invitation to participate was forwarded to the CES doctoral students in their program. This explains how some coverage error most likely occurred.

Sampling error may have transpired by limiting the sample to CACREP accredited programs and programs within three of the ACES regions. Differences between regions are unknown to the researcher, but may exist therefore increasing the chances of sampling error.
Twenty-one participants did not complete both instruments; and, of the potential fifty-one programs in the three ACES regions sampled, 60 usable responses were received. This low response may have occurred because the survey was administered over the holiday season and between semesters during break. CACREP liaisons and potential participants may not have attended to their emails during this time frame. Therefore, a non-response error was created among the sample.

Also, the participants in this sample may have self-selected because of an interest in research. In addition, an incentive was offered which may have changed the sample’s dynamics. All of these types of errors are not uncommon in survey research (Creswell, 2005).

**Recommendations for Future Research**

This small scale exploratory study was conducted in order to gather information about the many variables that may be related to Counselor Education and Supervision doctoral student research self-efficacy. Data gathered about the educational backgrounds and research related experiences of the participants in this study can be used to inform future research on this topic. Expanding the participant recruitment area may create a more diverse and representative sample of the CES doctoral students in the country.

One advantage of an exploratory study is it offers an opportunity for researchers to learn about the effectiveness of survey questions created for a study. In this instance, the demographic questionnaire used by the researcher may be modified for use in the future. It would be recommended to shorten the demographic questionnaire and ask only questions related to a particular construct under investigation. For example, if one is studying the relationship between research training credit hours and research self-efficacy...
only questions regarding the type and quality of research courses could be included. This may shorten the survey and decrease the attrition rate.

When participants were asked about their practice area, career aspiration, and counselor training concentration area, several participants selected more than one answer to the question. In the future, rewording these questions would be helpful. Participants could be directed to choose one response with which they most identify or one combined category could be added to the answer choices. This would add clarity to these questions and ease data coding for future studies. Adding questions about statistics and research anxiety to the demographic questionnaire would be helpful in the future as well.

Future studies may involve the ten research categories that constitute the CRAI: conceptualizing a study, designing a study, collaborating with others, funding a study, planning and managing a research study, protecting research subjects and responsible conduct of research, collecting, recording, and analyzing data, interpreting data, reporting a study, and presenting a study. These ten categories were determined to be essential components of research self-efficacy by the authors of the instrument (Mulliken et al., 2007). Future research may include learning about each of these ten areas as they relate to the research self-efficacy of CES doctoral students. Information about very specific skills associated with each research area could serve as a way to monitor the progress of CES doctoral student research training. Developing a cut-off score specific to the CRAI and CES doctoral student research self-efficacy may also be useful. In addition, learning more about which specific research courses, activities within those courses and the number of credit hour research credit hours needed to significantly impact CES doctoral student research self-efficacy could be explored in future studies.
References


annual conference of the American Psychological Association, San Francisco, CA.


Appendix A

Initial Email to CACREP-liaisons
Dear Name,

We are asking for your assistance in surveying Counselor Education and Supervision doctoral students in CACREP-accredited programs to examine what factors are predictive of their research self-efficacy. Within the next (number) days, you will receive another email which we respectfully request be forwarded to the Counselor Education and Supervision doctoral students in your program. This email will contain information about the study, instructions for accessing SurveyMonkey as well as the contact information of the researchers. The link to SurveyMonkey will lead students to the informed consent form, demographic questionnaire and the Clinical Research Appraisal Inventory (the survey instrument being used in this study).

If you have any questions or would like a copy of the findings of this study, please contact Amy Jones at amy.jones.8@hotmail.com or at 419-309-7410.

Thank you in advance for your consideration in assisting with this research project.

Sincerely,

Nick J. Piazza, Ph.D.  
Professor  
The University of Toledo  
2801 W. Bancroft  
Mail Stop 119  
Toledo, OH 43606  
(419) 530-4721

Amy L. Jones, M.Ed.  
Doctoral Candidate  
The University of Toledo  
2801 W. Bancroft  
Mail Stop 119  
Toledo, OH 43606  
(419) 309-7410
Appendix B

Participation Request for Counselor Education and Supervision Doctoral Students in CACREP-approved Programs
Hello!

We are surveying Counselor Education and Supervision doctoral students in CACREP-accredited programs to learn more about the factors that predict their research self-efficacy and we respectfully ask for your participation in our study. Below is a link to SurveyMonkey. By clicking on this link you will be lead to a secure site containing the informed consent form, demographic questionnaire and the survey instrument being used in the study.

There are no known risks from participating in this research project. Your name and e-mail address will not be connected to your responses, and your responses will remain anonymous.

Your participation in this research will contribute to the knowledge on doctoral-level Counselor Education and Supervision research training. If you have any questions or would like a copy of the findings of this study, please contact Amy Jones at amy.jones.8@hotmail.com or at 419-309-7410.

Thank you in advance for your participation.

Sincerely,

Nick J. Piazza, Ph.D.
Professor
The University of Toledo
2801 W. Bancroft
Mail Stop 119
Toledo, OH 43606
(419) 530-4721

Amy L. Jones, M.Ed.
Doctoral Candidate
The University of Toledo
2801 W. Bancroft
Mail Stop 119
Toledo, OH 43606
(419) 309-7410
Appendix C

Participation Reminder Email for Counselor Education Doctoral Students in CACREP-approved Programs
Hello!

This is a reminder that CES doctoral students in CACREP-approved programs are still needed as participants!

We are surveying Counselor Education and Supervision doctoral students in CACREP-accredited programs to learn more about the factors that predict their research self-efficacy and we respectfully ask for your participation in our study. Below is a link to SurveyMonkey. By clicking on this link you will be lead to a secure site containing the informed consent form, demographic questionnaire and the survey instrument being used in the study.

If you have already completed the survey, we thank you and ask you to please disregard this email.

There are no known risks from participating in this research project. Your name and e-mail address will not be connected to your responses, and your responses will remain anonymous.

Your participation in this research will contribute to the knowledge on doctoral-level Counselor Education and Supervision research training. If you have any questions or would like a copy of the findings of this study, please contact Amy Jones at amy.jones.8@hotmail.com or at 419-309-7410.

Thank you in advance for your participation.

Sincerely,

Nick J. Piazza, Ph.D. 
Professor
The University of Toledo
2801 W. Bancroft
Mail Stop 119
Toledo, OH 43606
(419) 530-4721

Amy L. Jones, M.Ed. 
Doctoral Candidate
The University of Toledo
2801 W. Bancroft
Mail Stop 119
Toledo, OH 43606
(419) 309-7410
Appendix D

Research Participation Thank You Email
Hello!

Thank you to everyone who participated in our study on Counselor Education and Supervision doctoral student research self-efficacy. Your contributions will contribute to the knowledge on CES doctoral-level research training.

If you have any questions or would like a copy of the findings of this study, please contact Amy Jones at amy.jones.8@hotmail.com or at 419-309-7410.

Thank you again for your participation!

Nick J. Piazza, Ph.D.  
Professor  
The University of Toledo  
2801 W. Bancroft  
Mail Stop 119  
Toledo, OH 43606  
(419) 530-4721

Amy L. Jones, M.Ed.  
Doctoral Candidate  
The University of Toledo  
2801 W. Bancroft  
Mail Stop 119  
Toledo, OH 43606  
(419) 309-7410
Appendix E

Request Letter to the Authors the Clinical Research Appraisal Inventory (CRAI) for Permission to Use
June 16, 2009

Dr. Elizabeth A. Mulliken
Dr. Lori L. Baken
University of Wisconsin, Madison
Nancy E. Betz
Ohio State University

Dear Drs. Mulliken, Baken and Betz:

I am a doctoral candidate in Counselor Education and Supervision at the University of Toledo. My dissertation research is on the perceived research self-efficacy of counseling doctoral students in accredited counseling programs. My search for an instrument to measure this construct led me to your article entitled: Assessing Research Self-Efficacy in Physician-Scientists: The Clinical Research Appraisal Inventory. After reviewing the literature on this topic including other instruments aimed at assessing research self-efficacy, the Clinical Research Appraisal Inventory is the instrument I would like to use for my dissertation research. I reviewed a revised version of this inventory on the Washington University School of Medicine Clinical Research Training site and discovered the questions posed covered the topic areas the counseling accrediting body requires counseling doctoral programs to cover in their research training. I am writing for permission to use the test for my research. If you are willing to allow me to use your instrument, please advise me as to how I can obtain a copy of it and how to score the instrument. I can be reached at 419-309-7410 or via email at amy.jones.8@hotmail.com. Or, you can contact my dissertation chair, Dr. John Laux, at 419-530-4705 or john.laux@utoledo.edu. We would be happy to answer any questions regarding this request. Thank you for your consideration.

I look forward to hearing from you.

Sincerely,

Amy Jones, M.Ed., PC
Doctoral Candidate
Counselor Education & Supervision
The University of Toledo

John M. Laux, PhD
Associate Professor
Counselor Education & Supervision
The University of Toledo
Appendix F

Email Communication Granting Permission from the Clinical Research Appraisal Inventory (CRAI) Authors to Use the Instrument
Re: FW: request to use the Clinical Research Appraisal Inventory

To: Jones Amy
From: Lori Bakken (lbakken@wisc.edu)
Sent: Fri 4/29/11 10:43 AM
To: Jones Amy (amy.jones.8@hotmail.com)

Hi Amy,

I apologize for my late reply. I lost track of your email among the huge number of them I get each day. Yes, you may use the CRAI for your dissertation. Please be sure to put the copyright statement at the bottom of the SurveyMonkey form. Thank you.

Lori Bakken

On 04/08/11, Jones Amy wrote:

Hi Dr. Bakken,

Thank you for your previous permission to use the CRAI. Because some time has passed I am writing to see if it is still okay to use the CRAI for my dissertation research. I am wondering if it is alright to post the CRAI on SurveyMonkey.

Thank you for your consideration.

Amy Jones
Doctoral Candidate
University of Toledo
Re: FW: request to use the Clinical Research Appraisal Inventory

Date: Wed, 17 Jun 2009 08:30:18 -0500
From: lbakken@wisc.edu
Subject: Re: request to use the Clinical Research Appraisal Inventory
To: amy.jones.8@hotmail.com

You're welcome. I look forward to reading about your research in published manuscripts :) 

Lori

******************************
Lori L. Bakken, M.S., Ph.D.
Associate Professor of Medicine
Affiliate Faculty, Depts. of Educational Leadership & Policy Analysis and Counseling Psychology
Asst. Director for Education, Institute for Clinical & Translational Research
University of Wisconsin - Madison
Research Phone: (608) 262-5239
Institute Phone: (608) 262-5151
Fax: (608) 262-5135

----- Original Message -----  
From: Jones Amy <amy.jones.8@hotmail.com>
Date: Tuesday, June 16, 2009 9:35 pm
Subject: RE: request to use the Clinical Research Appraisal Inventory
To: lbakken@wisc.edu, John Laux <jlaux2@utnet.utoledo.edu>
Cc: eamullikin@ocpd.wisc.edu, betz.3@osu.edu

Thank you! This will be very helpful. Amy

Date: Tue, 16 Jun 2009 14:55:36 -0500
From: lbakken@wisc.edu
Subject: Re: request to use the Clinical Research Appraisal Inventory
To: JLaux2@UTNet.UTOledo.Edu
Cc: eamullikin@ocpd.wisc.edu; betz.3@osu.edu; amy.jones.8@hotmail.com

John,

We're always happy to share the fruits of our labor in order to advance research efforts and learn more about the CRAI. I've attached the PDF file of the CRAI, along with a document about its use and the manuscript by Mullikin, Bakken & Betz (2007) that describes the scoring procedure. If the manuscript is not sufficiently detailed, please let me know and I will provide a step-by-step procedure for you.
Best wishes in your dissertation research. I look forward to reading about it in the future. :-)  

Regards,  
Lori Bakken

**************************************************************************************************  
Lori L. Bakken, M.S., Ph.D.  
Associate Professor of Medicine  
Affiliate Faculty, Depts. of Educational Leadership & Policy  
Analysis and Counseling Psychology  
Asst. Director for Education, Institute for Clinical &  
Translational Research  
University of Wisconsin - Madison  
Research Phone: (608) 262-5239  
Institute Phone: (608) 262-5151  
Fax: (608) 262-5135  

----- Original Message -----  
From: "Laux, John M." <JLaux2@UTNet.UToledo.Edu>  
Date: Tuesday, June 16, 2009 1:09 pm  
Subject: request to use the Clinical Research Appraisal Inventory  
To: eamullikin@ocpd.wisc.edu, lbakken@facstaff.wisc.edu, betz.3@osu.edu  
Cc: Jones Amy <amy.jones.8@hotmail.com>  

Please see attached letter regarding a request to use the Clinical Research Appraisal Inventory.

John M. Laux, PhD, PCC-S, LICDC  
Associate Professor  
Department of Counselor Education and School Psychology  
The University of Toledo  
2801 W. Bancroft St. MS#119  
Toledo, Ohio 43606  
Phone: (419) 530-4705  
Fax: (419) 530-7879
Appendix G

The Clinical Research Appraisal Inventory (CRAI)
# Clinical Research Appraisal Inventory

**INSTRUCTIONS:** The following items are tasks related to performing clinical research. Please indicate your ability to successfully perform each task by selecting a single number from zero to ten that best describes your level of confidence. The phrases next to the numbers (0-No Confidence and 10-Total Confidence) are only guides. You can use these numbers or any of the numbers in between to describe your level of confidence. We would like to know how confident you are that you can successfully perform these tasks today.

### Conceptualizing a Study

<table>
<thead>
<tr>
<th>Task</th>
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<th>10</th>
<th>Total Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Select a suitable topic area for study</td>
<td>No Confidence</td>
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<tr>
<td>2. Decide when to stop searching based on a literature review</td>
<td>No Confidence</td>
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<tr>
<td>3. Refine a problem so it can be investigated</td>
<td>No Confidence</td>
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<tr>
<td>4. Decide when to quit searching for related research/writing</td>
<td>No Confidence</td>
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<td>5. Develop a logical rationale for a particular research idea</td>
<td>No Confidence</td>
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<td>6. Organize your proposed research ideas in writing</td>
<td>No Confidence</td>
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<tr>
<td>7. Articulate a clear purpose for the research</td>
<td>No Confidence</td>
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<td>8. Place one’s study in the context of existing research and justify how it contributes to important questions in the area</td>
<td>No Confidence</td>
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<td>9. Explain (in a general way) the importance of theory to research</td>
<td>No Confidence</td>
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<td>10. Relate specific questions of interest to underlying theory</td>
<td>No Confidence</td>
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### Designing a Study

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<th>Total Confidence</th>
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<tr>
<td>11. Compare major types of studies (such as case reports, case controls, cross-sectional, longitudinal and epidemiological studies, clinical trials, etc.)</td>
<td>No Confidence</td>
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<td>12. Recognize important threats to internal and external validity applicable to each research design</td>
<td>No Confidence</td>
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<td>13. Choose an appropriate research design that will answer a set of research questions and/or test a set of hypotheses</td>
<td>No Confidence</td>
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<td>14. State the purpose, strengths and limitations of each study design</td>
<td>No Confidence</td>
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<td>15. Design a study using qualitative methods, e.g. ethnography, grounded theory or phenomenology</td>
<td>No Confidence</td>
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<td>16. Design a study using quantitative methods, e.g. experimental, quasi-experimental designs or clinical trials</td>
<td>No Confidence</td>
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<td>17. Determine the universe, population, and appropriate sample for a given study</td>
<td>No Confidence</td>
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<td>18. Determine an adequate number of subjects for your research project</td>
<td>No Confidence</td>
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<td>19. Select methods of data collection appropriate to the study population and variable(s) of interest</td>
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<td>20. Determine how each variable will be measured</td>
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<td>21. Select reliable and valid instruments to measure or assess variables</td>
<td>No Confidence</td>
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<td>22. Design the best data analysis strategy for your study</td>
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<td>Collaborating With Others</td>
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<td>Identify experts in your area of interest</td>
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<td>Consult senior researchers for ideas</td>
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<td>Identify faculty collaborators from within and outside the discipline who can offer guidance to the project</td>
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<td>Initiate research collaborations with colleagues</td>
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<td>Participate in generating collaborative research ideas</td>
<td>No Confidence</td>
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<td>Sustain effective collaborations</td>
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<td>Terminate a collaboration that isn’t working</td>
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<td>Work interdependently in a research group</td>
<td>No Confidence</td>
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<table>
<thead>
<tr>
<th>Funding a Study</th>
<th>No Confidence</th>
<th>0 1 2 3 4 5 6 7 8 9 10 Total Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify appropriate funding sources (local, state, national) to support a study</td>
<td>No Confidence</td>
<td>0 1 2 3 4 5 6 7 8 9 10 Total Confidence</td>
</tr>
<tr>
<td>Speak with a person at the funding agency regarding your project or project ideas</td>
<td>No Confidence</td>
<td>0 1 2 3 4 5 6 7 8 9 10 Total Confidence</td>
</tr>
<tr>
<td>Describe a major funding agency’s (e.g. NIH, NSF, or foundation) proposal review and award process</td>
<td>No Confidence</td>
<td>0 1 2 3 4 5 6 7 8 9 10 Total Confidence</td>
</tr>
<tr>
<td>Prepare a research proposal suitable for submission in one’s research area</td>
<td>No Confidence</td>
<td>0 1 2 3 4 5 6 7 8 9 10 Total Confidence</td>
</tr>
<tr>
<td>Establish a sufficient timeline for a grant application</td>
<td>No Confidence</td>
<td>0 1 2 3 4 5 6 7 8 9 10 Total Confidence</td>
</tr>
<tr>
<td>Locate appropriate forms for a grant application</td>
<td>No Confidence</td>
<td>0 1 2 3 4 5 6 7 8 9 10 Total Confidence</td>
</tr>
<tr>
<td>Prepare a project budget for a grant application</td>
<td>No Confidence</td>
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<tr>
<td>Establish collaborator and consultant agreements for a grant application</td>
<td>No Confidence</td>
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<tr>
<td>Write a competitive grant application</td>
<td>No Confidence</td>
<td>0 1 2 3 4 5 6 7 8 9 10 Total Confidence</td>
</tr>
<tr>
<td>Obtain necessary signatures for institutional approval of a grant application</td>
<td>No Confidence</td>
<td>0 1 2 3 4 5 6 7 8 9 10 Total Confidence</td>
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<table>
<thead>
<tr>
<th>Planning and Managing Your Research Study</th>
<th>No Confidence</th>
<th>0 1 2 3 4 5 6 7 8 9 10 Total Confidence</th>
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<tbody>
<tr>
<td>Maintain an organized system for ideas and references</td>
<td>No Confidence</td>
<td>0 1 2 3 4 5 6 7 8 9 10 Total Confidence</td>
</tr>
<tr>
<td>Develop plans for implementing a study, including timeline, budget and requirements for personnel, facilities and supplies</td>
<td>No Confidence</td>
<td>0 1 2 3 4 5 6 7 8 9 10 Total Confidence</td>
</tr>
<tr>
<td>Adhere to a timeline for research projects</td>
<td>No Confidence</td>
<td>0 1 2 3 4 5 6 7 8 9 10 Total Confidence</td>
</tr>
<tr>
<td>Maintain a log of your research process (experiments conducted, major decisions, analyses performed, etc.)</td>
<td>No Confidence</td>
<td>0 1 2 3 4 5 6 7 8 9 10 Total Confidence</td>
</tr>
<tr>
<td>Obtain or purchase appropriate supplies and equipment for a research study</td>
<td>No Confidence</td>
<td>0 1 2 3 4 5 6 7 8 9 10 Total Confidence</td>
</tr>
<tr>
<td>Prepare and submit required reports, budget requests and other documents to institutional administrators and funding agencies</td>
<td>No Confidence</td>
<td>0 1 2 3 4 5 6 7 8 9 10 Total Confidence</td>
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<td>Recruit and screen research project staff</td>
<td>No Confidence</td>
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<td>Set expectations and communicate them to project staff</td>
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<td>Train assistants to collect data</td>
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<td>Evaluate research project staff</td>
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<td>Ask staff to leave the project team when necessary</td>
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<td>(52) Explain the historical events that had significant impact on the federal regulations for the protection of human subjects.</td>
<td>No Confidence</td>
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<td>(53) Identify the responsibilities of research institutions and regulatory agencies in conducting research.</td>
<td>No Confidence</td>
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<tr>
<td>(54) Describe appropriate recruitment and retention methods used in clinical research.</td>
<td>No Confidence</td>
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<td>(55) Apply the appropriate process for obtaining informed consent from research subjects.</td>
<td>No Confidence</td>
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<td>(56) Write a human subjects consent form containing the appropriate elements.</td>
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<td>(57) Design a process utilizing special considerations for obtaining consent from vulnerable subjects.</td>
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<td>(58) Describe ethical concerns with the use of placebos in clinical research.</td>
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<td>(59) Discuss ethical issues involved in conducting genetic research.</td>
<td>No Confidence</td>
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<td>(60) Explain the potential risks and other special considerations associated with behavioral research.</td>
<td>No Confidence</td>
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<td>(61) Be knowledgeable and respectful of diverse ethical challenges associated with conducting research with minority populations.</td>
<td>No Confidence</td>
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<td>(62) Describe circumstances when the HIPAA Privacy Rule applies to research.</td>
<td>No Confidence</td>
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**Collecting, Recording and Analyzing Data**

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<td>(63) State the relationship between the chosen research design, the type of data collected, and the necessary statistical techniques.</td>
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<td>(64) Evaluate the reliability and validity of a given measurement.</td>
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<td>(65) Ensure data collection is reliable across trials, tests, or equipment.</td>
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<td>(66) Construct a plan for managing data files.</td>
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<td>(67) Organize data to store and analyze in a computer system.</td>
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<td>(68) Analyze data according to their level of measurement and the research design.</td>
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<td>(69) Avoid the violation of statistical assumptions.</td>
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<td>(70) Provide direction to computer specialists or statisticians on how to handle missing data.</td>
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<td>(71) Perform commonly used statistical tests, such as chi-square, t-test, analysis of variance, correlational, and multiple-regression.</td>
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<td>(72) Perform more advanced statistical tests used in one's research area, such as discriminant analysis, principal components analysis, multiple logistic analysis, survival analysis or time series analysis.</td>
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<td>(73) Use computer software to generate graphic images, such as flow charts or theoretical models.</td>
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<td>74. Explain the outcome of given analysis in terms of the originally stated hypotheses or research questions.</td>
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<td>75. Express appropriate methodological and theoretical cautions in interpreting results.</td>
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<td>76. Identify limitations of a study.</td>
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<td>77. Integrate the research findings into the existing literature by discussing what is known, unknown, and what requires further study.</td>
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<th>Reporting a Study</th>
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<td>78. Effectively edit your writing to make it logical and succinct.</td>
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<td>79. Cite strengths and limitations of a study based on the data.</td>
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<td>80. Select a journal for a manuscript submission.</td>
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<td>81. Organize a research report for a journal article according to an appropriate professional format and standards.</td>
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<td>82. Write a literature review that critically synthesizes the literature relevant to your own research question.</td>
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<td>83. Write a methods section that conveys sufficient methodological detail to permit subsequent replication of your work by others.</td>
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<th>Presenting Your Study</th>
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<td>90. Design visual presentations (posters, slides, graphs, pictures).</td>
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<td>91. Orally present results at a regional or national meeting.</td>
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<td>92. Defend results to a critical audience.</td>
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Page 4 of 4
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Appendix H

Information Sent by the CRAI Authors Regarding the Instrument
IMPORTANT INFORMATION
Clinical Research Appraisal Inventory (CRAI)

This Clinical Research Appraisal Inventory (CRAI) has been developed to assess an individual’s perceived abilities to perform tasks and activities needed to conduct clinical research (i.e. clinical research self-efficacy). Self-efficacy has been reported as an important factor in career decisions and outcomes. The CRAI is not a measure of competency, motivation or self-esteem and should be not used or interpreted as such. Since self-efficacy can change over time and varies across domains for a single individual, it is important to recognize that it be administered and interpreted as an assessment of confidence in one’s abilities at any given time. For more information regarding the self-efficacy construct and its importance in career development, a list of readings are provided below.

The psychometric properties of the Clinical Research Appraisal Inventory have been reported in a manuscript that is published in the Journal of Career Assessment (Mullikin, Bakken & Betz, 2007, Vol. 15, No. 3, 367-387). Although it appears to have excellent reliability and some degree of validity, further analyses need to be performed and additional samples need to be studied to support our claims. Keeping these limitations in mind, we encourage you to use the CRAI for assessing the research self-efficacy of your trainees and hope that you will share your findings.

If you have further questions about the development of the CRAI or its use, please contact:

Lori Bakken, M.S., Ph.D.
Assistant Professor, Department of Medicine
Affiliate Faculty, Counseling Psychology
and Educational Leadership and Policy Analysis
University of Wisconsin – Madison
1300 University Ave., Room 7255 MSC
Madison, WI  53706
Phone:  608-262-4238
Fax:  608-262-5135
Email:  lbakken@wisc.edu

For further reading:


Betz, N.E. Issues in the Assessment of Career Self-efficacy. Unpublished manuscript. The Ohio State University, Columbus.


Appendix I

Demographic Questionnaire
The Perceived Research Self-Efficacy of Counselor Education and Supervision Doctoral Students

Demographic Questionnaire

Note: This survey is intended for current Counselor Education and Supervision doctoral students in CACREP-accredited programs.

1. Please indicate your gender.
   Female     Male     Other (Please Specify):

2. What is your age?

3. What is your race/ethnicity? (Please check all that apply)
   Asian   Black or African American   Hispanic or Latino   Native Hawaiian or Pacific Islander   White or European American   I prefer not to answer   Other:

4. What is the highest degree you have received?

5. In what area of counseling did you receive your master's degree?
   Addiction Counseling   Career Counseling   Clinical Mental Health Counseling   Community Counseling   Marriage, Couple, and Family Counseling   Rehabilitation Counseling   School Counseling   Student Affairs and College Counseling   Other

6. At the time you received your master's degree in counseling, was the program CACREP-accredited? (yes/no)

7. What is your practice area?
   Addiction Counseling   Career Counseling   Clinical Mental Health Counseling   Community Counseling
Marriage, Couple, and Family Counseling
Rehabilitation Counseling
School Counseling
Student Affairs and College Counseling
Other

8. In what year did you receive your masters degree in counseling?

9. How many years passed from the time you received you masters degree in Counseling until you entered the doctoral program in Counselor Education and Supervision?
   
   Less than 6 months
   Less than 1 year
   1-2 years
   3-4 years
   5-6 years
   7-8 years
   8-9 years
   10 or more years

10. Did you complete a thesis during your undergraduate studies? (yes/no)

11. Did you complete a masters thesis? (yes/no)

12. Did you participate in any research projects with faculty during your undergraduate studies? (yes/no)

13. Did you participate in any research projects with faculty during your studies as a masters of counseling student? (yes/no)

14. Have you been published in a professional counseling peer-reviewed journal? (yes/no)

15. Have you been published in a peer-reviewed journal? (yes/no)

16. Have you been published in a professional counseling newsletter? (yes/no)

17. Have you been published in any non-peer reviewed publications? (yes/no)

18. Have you presented at a professional conference? (yes/no)

19. Have you presented at a professional counseling conference? (yes/no)

20. How many research courses did you take during your undergraduate studies? (Ex: design, methodologies, statistics, grant writing)
21. How many research courses did you take during your masters degree program? (Ex: research design, appraisal and assessment, statistics, etc.)

22. How many research training credit hours have you completed in the doctoral Counselor Education and Supervision program?

23. Have you participated in a journal club? (yes/no)

24. Do you currently have a research mentor? (yes/no)

25. Have you had a research mentor in the past? (yes/no)

26. What are your career aspirations?
   Community Counselor
   School Counselor
   Clinical Practice
   Academia

27. What is your current enrollment status?
   Part-time student
   Full-time student

28. How long have you been in the Counselor Education and Supervision program?

29. During your time as a masters of counseling student, did you take any research related courses from faculty outside of the counseling department? (yes/no)

30. During your Counselor Education and Supervision doctoral studies, have you taken or will you take any research courses from faculty outside of the counseling department? (yes/no)

31. In general, how confident are you in your research skills?
   Not confident
   Somewhat confident
   Confident
   Very confident

Thank you for completing the demographic questionnaire.
Appendix J

Informed Consent
Informed Consent

Purpose:
You are invited to participate in a research project titled “The Perceived Research Self-Efficacy of Counselor Education and Supervision Doctoral Students”. This study is being conducted at the University of Toledo under the direction of Dr. Nick Piazza, PhD. (Dissertation Advisor) and Amy Jones, M.Ed. (Doctoral Candidate). The purpose of this study is to learn about the predictive factors of research self-efficacy in Counselor Education and Supervision doctoral students. If you agree to participate, you will be asked to complete a survey about this topic as well as complete a demographic questionnaire.

Description of Procedures:
Doctoral students in CACREP-approved Counselor Education and Supervision programs are eligible for participation. Persons willing to participate can access SurveyMonkey and complete the informed consent, the Clinical Research Appraisal Inventory (CRAI), and a demographic questionnaire. These forms take approximately 30 minutes to complete.

If interested in learning the results of the study or if you have any questions about the research you may contact the researchers.

Compensation:
A drawing to win a $50.00 gift card to Barnes & Noble will be offered. If you would like to enter the drawing, you can email the researchers at amy.jones.8@hotmail.com. Participation is voluntary and will not be connected to your responses on the survey and questionnaire in any way.

Potential Risks:
There are minimal risks to participation in this study. If answering the questions on the questionnaires causes you to feel uncomfortable you may stop at any time.

Potential Benefits:
A direct benefit to you if you chose to participate in this research may be that you will contribute to the knowledge on Counselor Education and Supervision doctoral students’ perceptions of their research skills. This may add to the understanding of Counselor Education and Supervision doctoral research training.
Confidentiality:
No personal identifying information will be recorded or solicited and the website maintains confidentiality by utilizing a Secure Sockets Layer (SSL) protocol. Although we will make every effort to protect your confidentiality, there is a low risk that this may be breached. As with any type of internet communication, there may be risks with the transfer of information from one party to another.

Voluntary Participation:
By clicking on the “I Agree” box, you agree that you understand the procedures, risks, and benefits involved in this research. Your refusal to participate in this study will involve no penalty or loss of benefits to which you are otherwise entitled and will not affect your relationship with the University of Toledo. In addition, you may discontinue participation at any time without any penalty or loss of benefits. Your responses will be kept anonymous and are confidential. Your privacy will be protected as you will not be identified by name as a voluntary participant in this research project.

Contact Information:
Before you decide to accept this invitation to take part in this study, please feel free to contact the researchers with any questions. If you have questions at any time before, during, or after your participation, or experience any physical or psychological distress as a result of this research you may contact a member of the research team (Dr. Nick Piazza, PhD., Professor and Dissertation Advisor, 419-530-4721, n.piazza@utnet.utoledo.edu or Amy Jones, M.Ed., Doctoral Candidate, 419-309-7410, amy.jones.8@hotmail.com.

If you have questions beyond those answered by the research team or if you have questions about your rights as a research participant or experience research related injuries, please contact the chairperson of the Internal Review Board, Dr. Barbara Chesney, at 419-530-2844.

Your marking the “I Agree” box below indicates that you have read the information provided above, you have had all your questions answered, and you agree to take part in this research.

Do you agree to consent to the information listed on this form?

Yes, I Agree to the above form.

No, I Do Not Agree to the above form.
Appendix K

The 2009 Council for Accreditation of Counseling and Counseling Related Programs (CACREP) Research Standards
SECTION II PROFESSIONAL IDENTITY

FOUNDATIONS

A. Doctoral program objectives address the professional leadership roles of counselor education, supervision, counseling practice, and research competencies expected of doctoral graduates.

B. It is expected that doctoral students will have experiences designed to help them accomplish the following:

- Develop an area of professional counseling expertise as demonstrated through scholarly publications and/or presentations.
- Develop collaborative relationships with program faculty in teaching, supervision, research, professional writing, and service to the profession and the public.
- Participate in appropriate professional counseling organizations.
- Contribute to and promote scholarly counseling research.

KNOWLEDGE

C. Learning experiences beyond the entry level are required in all of the following content areas:

1. Theories pertaining to the principles and practice of counseling, career development, group work, systems, consultation, and crises, disasters, and other trauma causing events.

2. Theories and practices of counselor supervision.

3. Instructional theory and methods relevant to counselor education.

4. Pedagogy relevant to multicultural issues and competencies, including social change theory and advocacy action planning.

5. Design, implementation, and analysis of quantitative and qualitative research.


7. Ethical and legal considerations in counselor education and supervision (e.g., ACA Code of Ethics, other relevant codes of ethics, standards of practice).
Appendix L

The 2009 Council for Accreditation of Counseling and Counseling Related Programs (CACREP) Research Doctoral Learning Outcomes
RESEARCH AND SCHOLARSHIP

E. Knowledge

1. Understands univariate and multivariate research designs and data analysis methods.

2. Understands qualitative designs and approaches to qualitative data analysis.


4. Knows models and methods of program evaluation.

F. Skill/Practices

1. Demonstrates the ability to formulate research questions appropriate for professional research and publication.

2. Demonstrates the ability to create research designs appropriate to quantitative and qualitative research questions.

3. Demonstrates professional writing skills necessary for journal and newsletter publication.

4. Demonstrates the ability to develop and submit a program proposal for presentation at state, regional, or national counseling conferences.

5. Demonstrates the ability to write grant proposals appropriate for research, program enhancement, and/or program development.

6. Demonstrates the ability to create and implement a program evaluation design.
Appendix M

IRB Approval Letter
To:      Nick Piazza, Ph.D. and Amy Jones  
        Department of Counseling Education

From:    Barbara K. Chesney, Ph.D., Chair  
        Kamala London, Ph.D., Vice Chair  
        Walter Edinger, Ph.D., Chair Designee

Signed:  B. K. Chesney                     Date:  11/07/11

Subject: IRB #107622  
         Protocol Title: The Perceived Research Self-Efficacy of Counselor Education and Supervision Doctoral Students

On 11/07/11, the Protocol listed below was reviewed and approved by the Chair and Chair Designee of the University of Toledo (UT) Social Behavioral & Educational Institutional Review Board (IRB) via the expedited process. You have also been granted a waiver of written consent. This action will be reported to the committee at its next scheduled meeting.

Items Reviewed:
- IRB Application Requesting Expedited Review
- IRB Approved Electronic Consent/Assent Form(s) (version date 11/07/11)
- Survey(s) (version date 11/07/11)
- Email Recruitment Letter

This protocol approval is in effect until the expiration date listed below, unless the IRB notifies you otherwise.

Only the most recent IRB approved Consent/Assent form(s) listed above may be used when enrolling participants into this research.

Approval Date: 11/07/11  Expiration Date:  11/06/12
Number of Subjects Approved: 150

Please read the following attachment detailing Principal Investigator responsibilities.