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Counselor Education Doctoral Students' Research Self-Efficacy: A Concept Mapping Approach

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COUNSELOR EDUCATION DOCTORAL STUDENTS' RESEARCH SELF-EFFICACY: A CONCEPT MAPPING APPROACH

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ABSTRACT

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Research self-efficacy (RSE) is a key concept not only for counselor educators as successful researchers but also for the advancement of counselor education field. In the literature, researchers have studied multiple factors (e.g., research interest, productivity) to understand the complex nature of RSE phenomenon. Despite being informative, these studies only focused on partial aspects of the multilayered RSE, showing methodological and conceptual limitations. Particularly, we do not have a holistic understanding of RSE and the interrelated relationship among the factors informing RSE. In the current study, the researcher used a mixed-methods design, Concept Mapping (Kane & Trochim, 2007) to explore the factors influencing counselor education doctoral students' RSE in CACREP-accredited doctoral programs. Current study findings yielded 17 clusters represented in six regions describing the intrapersonal, interpersonal, and systemic levels of Ecological Model (McLeroy et al., 1988). The researcher discussed the findings in the view of the current literature along with implications for researcher training and future research practices as well as with the limitations of current study.

This dissertation is dedicated to my father Mehmet Sunal, mother Fatma Sunal, brother Abdullah Sunal. Thank you for trusting, believing, and supporting me throughout my whole life.
Love you!

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CHAPTER I

INTRODUCTION

In this chapter, the researcher introduces the RSE as a key part of researcher identity development. Next, the researcher discusses the rationale for the current study focusing on counselor education doctoral students, the purpose of the study, the statement of the problem, and the significance of the study. The chapter concludes with a brief overview of the chapters.

Importance of Research Self-Efficacy

Empirically-sound research is a critical priority for the development of professions. To ensure the quality of research efforts, most doctoral training programs embrace the scientist-practitioner model (Belar, 2000). The scientist-practitioner model combines clinical work with research where research informs an individual's critical thinking skills and clinical judgment, while supplying empirical directions to therapeutic interventions (Belar, 2000; Gelso & Lent, 2000; Petersen, 2007). The counselor education field also praises the scientist-practitioner approach and puts research at the heart of the profession's development (Gelso & Lent, 2000; Lambie, Sias, Davis, Lawson, & Akos, 2008). For example, American Counseling Association (ACA; 2014) supports the practice of research to provide empirical evidence to the counseling practices, while the Council for Accreditation of Counseling and Related Educational Programs 2016 Standards (CACREP; 2015) identifies research and program evaluation as one of the eight common areas for training in counseling master's and doctoral programs. Moreover, CACREP standards also includes research as one of the five professional roles in doctoral core areas among teaching, supervision, counseling, and leadership (CACREP, 2015; Section 6 Doctoral Standards Counselor Education and Supervision).

Research training helps students with developing their research agenda (Miller, 2006; Ramsey, Cavallaro, Kiselica, & Zila, 2002) and increases their chances of success in higher education positions upon graduation (McGrail et al., 2006). Holding an essential place in the CACREP-accredited doctoral program curriculums, development of research knowledge and skills as well as researcher identity are two of the main goals of a counselor education doctoral program. On the other hand, most counselor education doctoral programs do not require previous research experience as an admission requirement. During their doctoral program, though, students are expected to transition from being consumers to the producers of research (Ramsey et al., 2002; CACREP, 2015). Although the emphasis on research training and researcher identity have been increasing, there is limited research on understanding the concepts of researcher development in the counselor education field (Borders et al., 2014; Jones, 2012; Kuo et al., 2017; Lambie & Vaccaro, 2011; Miller, 2006).

Researcher identity development is described by a variety of terms in the literature, such as research identity (Reisetter et al., 2004), researcher identity (Lamar & Helm, 2017), scholarly development (Cannon, 2011), and research development (Kuo et al., 2017; Lambie, Hayes, Griffith, Limberg, & Mullen, 2014). Any given area of professional identity development includes multiple layers (Smith et al., 2006). Specifically, researcher identity development involves complex processes and multiple layers affected by numerous factors. Some of these factors appear as student characteristics (e.g., RSE, previous research training, previous research experience, research attitude), training program structure and resources (e.g., selection of students, required and/or elective research courses, research involvement integrated into the program structure, available resources), and nature of relationships (e.g., research mentorship, collaboration with faculty and peers). Despite being a broader concept, previous studies used

researcher identity development interchangeably with research self-efficacy (RSE; Bakken et al., 2010; Benishek & Chessler, 2005; Dumbauld et al., 2014; Gelso, Baumann, Chui, & Savela, 2013; Kahn & Schlosser, 2010; Kuo et al., 2017; Lambie & Vaccaro, 2011; Morrison & Lent, 2014; Phillips & Russell, 1994). Even though RSE is a crucial part of researcher identity development, it is important to acknowledge that these two are separate concepts, where the latter appears to subsume the prior (Lamar & Helm, 2017). In the current study, the researcher focuses on RSE.

As the most commonly referred scholar in the RSE literature, in his Social Cognitive Theory, Bandura (1986) defines self-efficacy as one's "judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (p. 391). Based on this definition, RSE could be described as an individual's perceptions and beliefs regarding their knowledge, skills, and capacity of successfully conducting research. According to Bandura's (1997) self-efficacy theory, individual's perceived self-efficacy can influence the performances that they expect from themselves, their goals, their involvement in activities they potentially expect to succeed, and their accomplishments. Bandura defines four primary sources constructing individual's self-efficacy beliefs: enactive mastery experiences, vicarious experiences, verbal persuasion, and physiological and affective states. Additionally, highlighting the importance of transactional view of self and society, Bandura also describes individuals as both producers and product of the systems that they exist in. However, despite some emphasis on the relational and environmental factors in the process of self-efficacy development, Bandura's theory characterizes self-efficacy with mainly individual-focused factors.

Attempting to inform individuals' researcher identity development, scholars have examined RSE as a "multifaceted socio-cognitive" concept (Bandura, 1997, p. 29). Researchers

studied RSE in relation to a variety of factors, such as research interest (Bart et al., 2000; Kahn & Scott, 1997; Lambie & Vaccaro, 2011; Lambie et al., 2014 Petko, 2012; Royalty et al., 1986), research motivation (Kahn & Schlosser, 2010; Kuo et al., 2017; Miller, 2006; Morrison & Lent, 2014; Reisetter et al., 2004), research training (Bakken et al., 2010; Betz, 1986, 1993; Black et al., 2013; Dumbauld et al., 2014; Jones, 2012; Wright & Holttum, 2012), research experience (Bieschke et al., 1996; Love et al., 2007), research productivity (Kahn, 2001; Kahn & Schlosser, 2010; Kahn & Scott, 1997; Kuo et al., 2017; Lambie & Vaccaro, 2011; Lambie et al., 2014; Morrison & Lent, 2014), gender (Bakken et al., 2010; Bieschke et al., 1996; Dumbauld et al., 2014; Jones, 2012; Kahn & Scott, 1997; Lambie & Vaccaro, 2011; Landino & Owen, 1988; Petko, 2012; Vasil, 1992; Wright & Holttum, 2012), race/ethnicity (Bakken et al., 2010; Lambie & Vaccaro, 2011; Petko, 2012), age (Bieschke et al., 1996; Jones, 2012; Lambie, 2014; Lambie & Vaccaro, 2011; Petko, 2012), year in the program (Bieschke et al., 1996; Kahn & Scott, 1997; Lambie & Vaccaro, 2011; Lambie et al., 2014; Morrison & Lent, 2014; Petko, 2012), career aspirations (Jones, 2012; Kahn & Scott, 1997; Lambie & Vaccaro, 2011; Petko, 2012), research mentorship (Atieno Okech et al., 2006; Borders et al., 2012; Briggs, 2006; Gelso 1997; Kahn , 2011; Kuo et al., 2017; Lambie & Vaccaro, 2011; Petko, 2012), other efficacy (Morrison & Lent, 2014), relation-inferred self-efficacy (Morrison & Lent, 2014), and perceptions of the research training environment (Gelso, Mallinckrodt, & Judge, 1996; Gelso et al., 2013; Kahn, 2001; Kahn & Miller, 2000; Kahn & Schlosser, 2010; Lambie & Vaccaro, 2011; Morrison & Lent, 2014; Phillips & Russell, 1994). Relying solely on Bandura's theory, many of these studies, however, primarily focused on the individually based perspective and neglected the relational and systemic aspects of self-efficacy development (e.g., Kuo et al., 2017; Lambie et al., 2014; Schlosser &

Gelso, 2001). The need to understand the complex nature via focusing the interrelated and systemic aspects of RSE remained unmet.

A Holistic Approach to Research Self-Efficacy (RSE)

Exploration of a complex concept like RSE along with all relevant factors could be overwhelming, thus, researchers appeared to focus on more manageable components of the bigger picture. The abovementioned review of RSE research revealed that some of these efforts involved inclusion and examination of some of the critically relevant factors (e.g., demographic information, research experience, research mentorship, research training environment). By examining each part separately, researchers have provided us with the opportunity to focus and understand detailed nature of the specified factors in relation to RSE. However, our current knowledge from these studies is limited to offer an explanation to the relational, nuanced, and dynamic nature of the concept. Thus, a holistic examination of RSE and its related factors is warranted. In other words, in addition to the individualistic lens of existing studies, integration and examination of the multiple layers of RSE concept (i.e., intrapersonal, interpersonal, and systemic) could help us grasp various parts of the larger picture. Despite being commonly used to emphasize the individual factors, Bandura's theory lays a solid ground for the RSE research and requires further clarifications and exploration of interpersonal and systemic factors of RSE (Biglan, 1987; Lent & Lopez, 2002). Therefore, in this study, building upon Bandura's (1986) Social Cognitive Theory, the researcher approached research self-efficacy concept with the lens of McLeroy, Bibeau, Steckler, and Glanz's (1988) Ecological Model and utilize the Tripartite Model of Efficacy Belief (Lent & Lopez, 2002) within this model to further explore the relational and systemic aspects of RSE.

Coming from a broader perspective, the Ecological Model emphasizes the reciprocal causation between the individual and their environment and suggests that an individual can be understood in five levels: 1) intrapersonal, 2) interpersonal, 3) institutional, 4) community factors, and 5) public policy (McLeroy et al., 1988). Building onto often studied intrapersonal factors, to address the interpersonal factors in relation to RSE in this study, the researcher also incorporated Lent and Lopez's (2002) Tripartite Model of Relational Efficacy Beliefs. The Tripartite Model draws attention to the transactional relationship of an individual's efficacy beliefs by including two more factors to self-efficacy concept: (1) other-efficacy and (2) relation-inferred self-efficacy (RISE). In a dyadic relationship, Lent and Lopez (2002) defines other efficacy as each party's perception of other's efficacy and RISE as each party's perception of how their efficacy is perceived by the other party. For example, in a doctoral student-faculty advisory relationship, a doctoral student's perception of their research efficacy would be the traditionally known concept of self-efficacy, whereas the doctoral student's perception of their advisor's research efficacy would be the other efficacy, and doctoral student's perception of their advisor's views of the doctoral student's research efficacy would be the RISE.

There are only four studies exploring RSE in the counselor education field. Counselor education researchers have examined RSE in relation to some of the intrapersonal, interpersonal, and systemic factors; such as research interest (Lambie & Vaccaro, 2011), research motivation (Kuo et al., 2017), research training (Jones, 2012), research mentorship (Kuo et al., 2017; Petko, 2012), year in the doctoral program (Lambie & Vaccaro, 2011), demographic characteristics (i.e., age, gender, enrollment status; Jones, 2012), and perceptions of research training environment (Lambie & Vaccaro, 2011). Beyond those, however, there are other factors (e.g., other-efficacy, RISE) that has not yet been explored with a counselor education sample. Exploration of these

factors all together might provide us a more realistic understanding of the RSE concept in the counselor education field. Thus, rather than leaving some components out or specifically focusing on a few of the common factors, an exploration of the complex structure of RSE is called for. Such an understanding may be critical in advancing researcher identity of counselor education doctoral students as well as progression of the counselor education field.

Purpose of the Study

In the current study, the researcher aimed to conceptualize counselor education doctoral students' RSE through a holistic framework. Utilizing different levels of Ecological Model (i.e., intrapersonal, interpersonal, and systemic; McLeroy et al., 1988), the researcher included previously examined factors along with unexamined factors in a counselor education doctoral student sample. Thus, the purpose of the proposed study was to get a holistic understanding of counselor education doctoral students' RSE from intrapersonal (e.g., demographic information and previous research experience), interpersonal (e.g., research mentorship, other-efficacy, relation-inferred self-efficacy) and systemic (e.g., research training environment) perspectives. In order to utilize the strengths of both qualitative and quantitative designs, in the current study, the researcher used a mixed-methods approach, Concept Mapping (Kane & Trochim, 2007; Trochim, 1989) to address the following research question: What are the factors of counselor education doctoral students' RSE in CACREP-Accredited doctoral programs?

Significance of the Study

Findings of the current study provides us with a richer and more realistic description of counselor education doctoral students' RSE. Such an understanding does not only congregate the constructing factors of the RSE, but also provides knowledge about the dynamic relationships among these factors. Multiple stakeholders might benefit from the current study results: doctoral

students, research mentors, faculty, and programs with research training focus (e.g., master's and doctoral-level counselor education programs).

More specifically, from an intrapersonal point of view, exploring the nuanced and complex nature of the RSE concept might help the trainees to understand and normalize their own experiences. Such understanding and awareness might offer opportunities to trainees to be more actively involved in their own learning by being intentional in structuring the processes as they need.

From an interpersonal point of view, mentors play an essential role (Gelso et al., 2013; Khan & Schlosser, 2010; Morrison &Lent, 2014; Schlosser & Khan, 2007). However, despite their critical role, research mentors reported their struggles to understand and manage mentorship requirements along with their other responsibilities (Hollingsworth & Fassinger, 2002; Borders et al., 2012). Thus, research mentors might also benefit from findings of the current study. Providing further validation for their experiences, findings from the current study may inform research mentors with an understanding for how to establish and structure the mentorship relationship in more efficient and effective ways. Additionally, this knowledge could also be used to structure an intentional and easier-to-follow outline for research mentorship (Borders et al., 2012).

With further RSE knowledge, the researcher provides a new leeway for broaden exploration of different patterns individuals might experience in the process of researcher identity development. Such exploration also provides empirical support for counselor education programs to develop intentional research training environments supporting researcher identity development of not only doctoral students, but also master's students aspiring to pursue doctoral studies. Exploration of these factors from a holistic perspective establishes the interpersonal and

systemic understanding of RSE development process in addition to intrapersonal-focused content. The dimensions of RSE in the current study especially relevant in contributing to the RSE development of counselor education doctoral students due to the relational focus of our programs. Finally, the RSE structure concluded in the current study informs us about potential structural barriers in our research training environments that might cause students to have lower RSE and, in return, lower motivation, involvement, and productivity, which may ultimately lead to drop-out of the doctoral program at the dissertation stage, or turnover in tenure-track faculty positions.

Definition of Terms

Research self-efficacy (RSE). A researcher's perception of their knowledge, skills, and capacity to conduct research.

Research involvement. Status of being involved to at least one research project during the doctoral program or before starting the doctoral program.

Research training. Completed research training (e.g., completed classes, trainings, and webinars) during the doctoral program or before starting the doctoral program.

Other-efficacy. In a dyadic relationship each party's perception of other's efficacy. For example, in a doctoral student-faculty mentoring relationship, doctoral student's perception of mentor's research efficacy would be the self-efficacy.

Relation-inferred self-efficacy (RISE). In a dyadic relationship each party's perception of how their efficacy is perceived by the other party. For example, in a doctoral student-faculty mentoring relationship, doctoral student's perception of how their mentor views their research efficacy would be the RISE.

Research mentorship. Individuals' beliefs about research mentorship including the advisory working alliance, and personal and professional match between the research trainee and the mentor.

Research training environment (RTE). Gelso (1979; 1993) described ten ingredients affecting doctoral students' motivation and anxiety as well as their interest in and effectiveness with research: (a) faculty modeling of appropriate scientific behavior, (b) reinforcement of student research, (c) early involvement in research, (d) separation of statistics and research, (e) facilitation of students' 'looking inward' for research ideas, (f) presentation of the concept of science as a partly social experience, (g) teaching all experiments are flawed and limited, (h) a focus on varied investigative styles, (i) wedding of science and clinical practice, and (j) focus on training needs for agency-based research.

Overview of the Chapters

Current study is presented in five chapters. In the first chapter, the researcher provides an introduction to the RSE as an important component of researcher identity development, the rationale for the current study focusing on counselor education doctoral students, the purpose of the study, the statement of the problem, and the significance of the study. In the second chapter, the researcher includes a review of the theoretical and empirical literature on RSE and its factors. In the third chapter, the researcher presents the method and procedures, while the fourth chapter includes the presentations of sample demographics and the results. Lastly, in the fifth chapter, the researcher discusses the study findings from an ecological perspective within the context of existing literature and concluded it with limitations, implications, and recommendations for future research.

CHAPTER II

LITERATURE REVIEW

In this chapter, the researcher provides a review of the theoretical and empirical literature on RSE and its factors. The chapter starts with an introduction, followed by description of the theoretical framework. Next, the researcher discusses all the factors and the findings from previous studies using the proposed framework. Lastly, the chapter is concluded with a summary.

Researcher Training in Counselor Education

Research is the cornerstone of scientific development in all fields. To ensure continuous evaluation and advancement of the professions, high quality and empirically based research activities (e.g., publications in peer reviewed journals, professional conference presentations) are critical. Doctoral programs undertake the role of training researchers who can retain and further these empirical research efforts. Research training and researcher development, therefore, become a critical area of study to ensure efficient and effective training practices with doctoral students.

Praising scientist-practitioner model, counselor education field emphasizes the importance of informing counseling professionals' critical thinking skills and clinical judgment through research (Belar, 2000; Gelso & Lent, 2000; Petersen, 2007). Professional counseling organizations encourage and require utilization of research professional practices. For example, American Counseling Association (ACA; 2014) supports the use of research in providing empirical evidence to counseling practices. The Council for Accreditation of Counseling and Related Educational Programs 2016 Standards (CACREP; 2015) identifies research and program evaluation as one of the eight common areas for training in counseling master's and doctoral

programs. Furthermore, CACREP-accredited counselor education doctoral programs include research as one of the five doctoral core areas of training among teaching, supervision, counseling, and leadership, indicating researcher as one of the five primary professional roles of counselor educators (CACREP, 2015; Section 6 Doctoral Standards Counselor Education and Supervision). In order to keep CACREP-accreditation, counselor education doctoral programs are required to structure their curriculum in a manner to support students during their doctoral program to gain a strong research knowledge and skillset, and graduate with a solid researcher identity. Furthermore, counselor education faculty positions require candidates to be effective researchers to consume and produce research for the advancement of the field (Atieno Okech et al., 2006), equip future generations of counselor educators with the necessary research skills (Phillips et al., 2004), and ultimately prepare them for success in the academic world (Bailey, 1999). Despite the emphasized importance of research training and training successful researchers, a good number of counselor education doctoral students report feeling unprepared, uninterested, unproductive, or apprehensive about research (Jones, 2012; Lambie & Vaccaro, 2011; Reisetter et al., 2004), highlighting the need for further understanding of research self-efficacy in our field. Nevertheless, the research on understanding the concepts of researcher development in the counselor education field is limited (Borders et al., 2014; Jones, 2012; Kuo et al., 2017; Lamar & Helm, 2017; Lambie & Vaccaro, 2011; Miller, 2006).

In the literature, researcher development is commonly studied in relation with multiple factors, such as research self-efficacy, research training, research experience, research attitude, and research mentorship (Lamar & Helm, 2017). As mentioned before, research self-efficacy (RSE), one of the most commonly studied components of researcher development, is frequently used interchangeably with the researcher identity in the literature (Bakken et al., 2010;

Dumbauld et al., 2014; Gelso et al., 2013; Kahn & Schlosser 2010; Kuo et al., 2017; Lamar & Helm, 2017; Lambie & Vaccaro, 2011; Morrison & Lent, 2014; Phillips & Russell, 1994). A few of the reasons cause this confusion appear to be: (1) the bidirectional relationship between researcher development and RSE, (2) the multiple factors commonly studied in relation to both researcher development and RSE (e.g., publications, year in the program, interest, research training environment), and (3) the bidirectional relationships among these common factors, researcher development, and RSE. Thus, further examinations of RSE and its complex nature could advance our understanding of researcher development process and assist us in the process of separating these two concepts.

A Holistic Approach to Research Self-Efficacy (RSE)

The literature on RSE mainly relies on Bandura's Social Cognitive Theory (SCT). As part of SCT, Bandura (1986) defines self-efficacy as one's "judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (p. 391). In SCT, reciprocal determinism explains self-efficacy development as an individual's advancement with continuous bidirectional interactions between behavioral, cognitive, and environmental influences (Bandura, 1978; 1986). According to Bandura (1994), self-efficacy formation starts with the birth of an individual and evolves based on developing personal and social experiences. More specifically, interactions with family is followed by interactions with peers and experiences at school and then at work broadening cultivation and social validation of cognitive competencies. Individuals continuously come across new types of competency demands requiring further development of personal efficacy based on their experiences in different eras of their lifespan (e.g., childhood, adolescence, adulthood). Formation and exercise of self-efficacy is a developmental process that continues throughout the lifespan.

According to Bandura (1994), there are four sources of self-efficacy; mastery experiences, vicarious experience, social persuasion, and somatic and emotional states. An individual's past successes in relevant tasks (mastery experience), observations of other people's (similar to themselves) successes (vicarious experience), receiving feedback on having what it takes to succeed (social persuasion), and experiencing comfortable somatic and emotional conditions (somatic and emotional state) are likely to increase one's belief in their self-efficacy. Self-efficacy beliefs affect an individual's life choices, level of motivation, quality of functioning, resilience to adversity, and even vulnerability to stress and depression (Bandura, 1994, 1997). An individual's efficacy beliefs may vary on different dimensions: (1) the subject, (2) level of difficulty in the same subject, (3) generalizability across variety of difficulty levels, (4) generalizability across different subjects, (5) strength of belief, and (6) surrounding circumstances. Considering the diverse nature of efficacy beliefs, self-efficacy in any specific domain needs to be understood within its context (Bandura, 1997). For example, an individual's professional self-efficacy beliefs might drastically differ across different areas of the same profession. More specifically, a counselor educator might have strong supervision self-efficacy, while having lower research self-efficacy, comparatively. The strength and generalizability dimensions of one's self-efficacy might influence their domain specific self-efficacy beliefs; while sources and contextual factors of self-efficacy still play a key role. For example, an individual's strong self-efficacy as a counselor educator could lend itself to strong self-efficacy beliefs as a researcher, supervisor, counselor, teacher, and leader. However, based on sources and contextual factors, an individual might demonstrate stronger research, supervision, and counseling self-efficacy, while holding weaker teaching and leadership self-efficacy. Therefore,

a thorough understanding of a specific domain of self-efficacy requires individualized attention and exploration.

Theoretical Framework of the Current Study

Based on Bandura's (1986) self-efficacy definition, RSE can be described as an individual's perceptions and beliefs regarding their knowledge, skills, and capacity of successfully conducting research. The individual is at the heart of this definition. Thus, previous studies on RSE primarily examined individuals' research interests, motivation, training, experiences, productivity, and demographic information. For example, Bieschke et al. (1996) examined RSE in relation to interest in research involvement, number of years in graduate school, and the amount of involvement in research activities. Similarly, Dumbauld et al. (2014) explored the relationships between student learning styles and research training experience and RSE. Furthermore, Lambie and Vaccaro (2011) studied career aspirations, counseling specialty, gender, age, year in the program, research productivity, interest, and involvement in relation to counselor education doctoral students' RSE.

On the other hand, when describing the sources of vicarious learning and social persuasion, Bandura (1997) emphasizes the importance of structuring situations and environments to make sure the individuals have all they need to succeed, they are not prematurely placed in situations where they are likely to fail, and they are also provided with modeling and verbal encouragement that affirming they have what it takes to succeed. Thus, it can be concluded that self-efficacy is not a stand-alone concept. Self-efficacy includes and requires relational and contextual elements.

While emphasizing the importance of environment in the process of self-efficacy development, Bandura's theory does not offer us with the answer what role interpersonal and

systemic factors play is still vague (Biglan, 1987; Lent & Lopez, 2002). Thus, the studies utilizing solely Bandura's self-efficacy theory moves attention away from interpersonal and systemic factors. Furthermore, even when the focus directed to the interpersonal and systemic factors, these studies appear to use individual-level data to draw interpersonal and systemic conclusions, which may simplify the analyses while offering us an incomplete picture. Since self-efficacy is not a context-less global disposition (Bandura, 1997), in this study, to further understand the RSE within a broader context the researcher utilized McLeroy, Bibeau, Steckler, and Glanz's (1988) Ecological Model to conceptualize RSE in a three-part scaffold.

Ecological Model informing RSE. Using Bronfenbrenner's Ecological Systems Model (1979) as a conceptual framework, McLeroy et al.'s (1988) Ecological Model offers a systems perspective while focusing on both individual and environmental factors. Differing from traditional systems models, though, Ecological Model views individual's behavioral pattern rather than focusing on outcomes (McLeroy et al., 1988). In other words, Ecological Model provides a more in-depth understanding of process rather than simplifying success of a system to the individual. Furthermore, the Ecological Model suggests a reciprocal causation between the individual and their environment (Pervin, 1968; Endler & Magnusson, 1968).

Ecological Model defines an individual's experience in five levels: (1) intrapersonal, (2) interpersonal, (3) institutional, (4) community, and (5) public policy (McLeroy et al., 1988). Intrapersonal factors include the developmental history and characteristics of the individual (e.g., attitudes, knowledge, behaviors, and skills). Interpersonal processes focus on formal and informal primary groups (e.g., family, peers, teachers, and colleagues) and their interactions. Organizational structures and characteristics exemplify the institutional factors; relationships of

which define the community factors. Lastly, local, state, and national laws and policies construct the public policy.

In this study, the researcher used intrapersonal and interpersonal levels as they are. However, due to the nature of the RSE concept, institutional, community, and public policy levels are collapsed in one level as a systemic factor and examined through the reflections of organizational policies (e.g., CACREP, ACA) in program-specific systemic factors, such as research training curriculum (e.g., required classes and scholarly activities). To further explore the interpersonal level, the researcher also incorporated Lent and Lopez's (2002) Tripartite Model of Relational Efficacy Beliefs.

Tripartite Model of Relational Efficacy Beliefs. In their Tripartite Model of Relational Efficacy Beliefs, Lent and Lopez (2002) build upon Social Cognitive Theory and suggest that an existing self-efficacy belief continuously evolves based on the interactive relationships. Focusing on the interpersonal relationships, they present that self-efficacy is directly related to two additional forms of efficacy (i.e., other-efficacy and relation-inferred self-efficacy [RISE]). These two forms are influential on the relationships and the self-efficacy formation processes. In the model, self-efficacy is defined as each partner's view of their own efficacy. Other-efficacy is defined as each partner's views of the other's efficacy. Lastly, relation-inferred self-efficacy (RISE) defined as each partner's beliefs about how their efficacy is viewed by the other partner. Using Lent and Lopez's framework, Morrison and Lent (2014) examined RSE across three types of efficacy; RSE, other-research efficacy, and relation-inferred RSE. Differing from the majority of RSE studies, Morrison and Lent suggested that, in any given mentoring relationship, an individual's RSE is also affected by the individual's perception of their mentor's RSE, and the individual's perception of their mentor's perception of their RSE. For example, in a doctoral

student-faculty mentoring relationship, a doctoral student's perception of their research efficacy would be the RSE, whereas the doctoral student's perception of their mentor's research efficacy would be the other-efficacy, and doctoral student's perception of their mentor's views of the doctoral student's research efficacy would be the RISE.

Lent and Lopez (2002) described a circular relationship between these three forms of efficacy. As self-efficacy beliefs might influence an individual's RISE perception, RISE might also offer relationship-specific information that influences self-efficacy. Moreover, through verbal or non-verbal means, RISE might mediate the effects of other-efficacy. All other forms of efficacy might affect an individual's relationship satisfaction as well as their persistence and intention. Self-efficacy and other-efficacy beliefs influence choices of relationship partners, type of joint activities, and amount of effort an individual put into that relationship. Other-efficacy beliefs might have self-confirming processes; for example, holding certain expectations in a relationship might intentionally or unintentionally influence people's beliefs and behaviors. Lent and Lopez (2002) further suggests that RISE might be especially important in situations that involve (a) developing new skills, (b) using existing skills in a new context, and (c) reevaluating existing skills during a crisis or transition.

To date, researchers used the Tripartite Model in dyadic relationship research with romantic couples (Lopez & Lent, 1991) and athletes and their coaches (Jackson & Beauchamp, 2010; Jackson, Beauchamp, & Knapp, 2007). Most relevant to the current study, Morrison and Lent (2014) examined the Tripartite Model by examining counseling psychology doctoral students' perceptions of others-efficacy and RISE in relation to their RSE. They reported that RISE had a direct link with counseling psychology doctoral students' RSE; when students perceived their advisors' trust in their research skills, they reported higher levels of RSE.

There are multiple studies exploring RSE from different fields such as medicine (e.g., Mulliken et al., 2007), psychology (e.g., Deemer, 2010; Kahn, 2001; Phillips et al., 2004), social work (e.g., Holden et al., 1999; Unrau & Beck, 2004; Unrau & Grinnel, 2005), and speech pathology (e.g., Unrau & Beck, 2004). Unfortunately, studies targeting counselor education doctoral students' RSE are scarce and mostly unpublished dissertation projects (Jones, 2012; Kuo et al., 2017; Lambie & Vaccaro, 2011; Petko, 2012). Examining the relationships between similar variables, studies in the counselor education field focused on factors of RSE in various combinations and reported inconsistent results with the literature from other fields. For example, while multiple studies suggested that RSE was related to research productivity (e.g., Kahn, 2001; Kahn & Schlosser, 2010; Kahn & Scott, 1997; Lambie et al., 2014), contradicting the previous literature in other fields, Lambie and Vaccaro (2011) did not find any significant relationship between RSE and research productivity for counselor education doctoral students. Similarly, Petko (2012) found significant associations between research interest and RSE for counselor education doctoral students, while Kahn and Scott (1997) found that RSE did not predict research interest.

One of the possible reasons to the equivocal results can be the lack of holistic approach to the RSE factors. Thus far there is no study exploring all the available factors of RSE and their relationship. Furthermore, all the counselor education studies rely on survey method and quantitative research design which might limit the rich understanding of such a complex phenomenon like RSE. The current study aims to fill this gap by using a mixed method design and keeping a holistic perspective. Through mixed method design, the researcher expects to have access to unique factors that might come out from participants experience as well as

utilizing all the previously studied factors to have a complete picture of RSE factors and their relationship.

To obtain a more in-depth understanding of RSE literature, the researcher overviewed a comprehensive list of RSE factors examined to date. During this overview, consistent with the conceptual frame proposed earlier, intrapersonal factors (i.e., research interest, research motivation, research training, research productivity, research experiences, and demographic information), interpersonal factors (i.e., research mentorship, other efficacy, and relation-inferred self-efficacy), and systemic factors (i.e., perceptions of the research training environment) informing RSE are presented in the following section.

RSE Factors

Intrapersonal

Intrapersonal factors include personal characteristics of an individual such as training and developmental history and interest. Researchers often examined RSE in relation to intrapersonal factors (i.e., research interest, motivation, training, experience and productivity, and demographic information). Next, the researcher reviewed each of these intrapersonal factors and the studies exploring these factors in relation to RSE.

Research interest. Research interest can be defined as an individual's interest in conducting research (Bishop & Bieschke, 1994). As part of Social Cognitive Career Development Theory, Lent, Brown, and Hackett (1994) suggested a model of interest development. In this model, interest is explained as a product of personal (e.g., investigative interests, artistic interests, self-efficacy, outcome likelihood) and environmental inputs (e.g., exposure, training, vicarious learning). Furthermore, Lent et al. (1994) suggested interest leads

to intentions and goals. Considering personal interest's fundamental relationship with self-efficacy, training, intentions, and goals, researchers also examined interest in relation to RSE.

In studies with counselor education doctoral students, researchers found significant association between research interest and RSE (Lambie & Vaccaro, 2011; Petko, 2012). With a sample of counseling psychology doctoral students, Royalty et al. (1986) found contribution of faculty modeling on the positive changes in research attitudes and interest. Furthermore, Kahn (2011) reported that research interest influenced counseling psychology students' research productivity and overall perceptions of the research training environment (RTE). Similarly, Bart et al. (2000) found positive relationship between RSE and research interest among rehabilitation counseling doctoral students. In their study with doctoral students from education fields, Lambie et al. (2014) reported higher levels of RSE was predictive of higher interest in research. On the other hand, Kahn and Scott (1997) found that RSE did not predict research interest.

Research motivation. Research motivation can be defined as an individual's drive to conduct research, driving from different sources for each individual (Deemer, Martens, & Buboltz, 2010; Kuo et al., 2017). Deemer et al. (2010) developed the Tripartite Model of Research Motivation to understand potential motivators for research. The model postulated three types of research motivation: intrinsic, extrinsic, and failure avoidance.

As implied in the name, intrinsic motivation looks for the source of motivation within the individual, such as having a personal interest. Intrinsic motivation is suggested to be related to higher levels of research activity compared to the other two types of motivation (Kahn & Schlosser, 2010; Morrison & Lent, 2014). In their study exploring counselor education doctoral students' experiences in their first interaction with qualitative research, Reisetter et al. (2004) reported that intrinsic motivation directed most students to the specific research methods.

Extrinsic motivation, on the other hand, includes driving sources outside of the individual, such as incentives and rewards. Having publications, for example, can increase a doctoral student's possibility of finding an academic position; thus, job marketability can be a good example for research extrinsic motivation (Hoskins & Goldberg, 2005). Lastly, failure avoidance comprises desire to minimize the negative possible outcomes, such as shame (Kuo et al., 2017). For example, mostly high achieving doctoral students might complete a demanding research task, such as dissertation to avoid perceived shame from faculty, family and peers.

Researchers highlighted the importance of motivation in understanding students' RSE development, research productivity, and research mentorship. For example, Miller (2006) reported intrinsic and extrinsic goal aspirations predicted scholarly productivity of counselor education doctoral students. Similarly, Kuo et al. (2017) reported intrinsic motivation and RSE predicted the research productivity. Furthermore, Kuo et al. reported that perceptions of advisory relationship moderated the relationship between intrinsic and failure avoidance motivation and productivity.

Research training. Research training of an individual covers all research related educational activities (i.e., courses, webinars) in which the individual acquired necessary knowledge to conduct research. Most of the time counselor education doctoral students start the doctoral program with very limited research training and experiences (Borders, Wester, Fickling, & Adamson, 2014; Atieno Okech et al., 2006). Furthermore, even though CACREP (2016) requires counselor education doctoral programs to cover quantitative and qualitative methods, measurement and test construction, as well as research ethics and integrity topics, there is no detailed structure on how these topics should be taught. Thus, research training practices differ across CACREP-accredited doctoral programs (Borders et al., 2014; Petko, 2012).

Exploring provided research training in CACREP-Accredited doctoral programs, Borders et al. (2014) reported that counselor education doctoral students' research training included the required areas of CACREP (2016) standards presented above. Among these areas, quantitative methods were the most frequently covered topic, while measurement and test construction were the least frequently covered topic in counselor education doctoral programs. Moreover, Borders et al. reported that most research courses were taught by non-counseling faculty. In studies examining research training, researchers reported significant positive correlation between the completed research courses and RSE for students from fields of counselor education (Jones, 2012), psychology (Betz, 1986, 1993; Wright & Holttum, 2012), biomedical science (Bakken et al., 2010), and medical (Black et al., 2013; Dumbauld et al., 2014), highlighting the importance of research training for doctoral students' RSE.

Research experience and productivity. Despite their interchangeable use in the literature, research experience and research productivity appear to be related but different concepts. Research experience can be defined as the process of exposure and involvement in research activities, while research productivity refers more to the rate of manufacturing research, outcome. As a more commonly explored concept, research productivity was defined in different ways. Some researchers just looked at the number of published manuscripts for the productivity (Bakken et al., 2010). Using a more comprehensive definition, on the other hand, Kahn and Scott (1997) defined research productivity as the number of: (a) articles submitted to refereed journals, (b) published manuscripts as a first or coauthor, (c) authored or coauthored unpublished empirical manuscripts, (d) professional presentations made at local, regional, or national conventions, (e) local, regional, or national research conventions attended, (f) projects currently worked on to be submitted for publication, and (g) presentations currently worked on to be

submitted to conventions. Similarly, Ramsey et al. (2002) utilized four forms of scholarship suggested by Boyer (1990; i.e., discovery, integration, application and teaching) and suggested a broad definition for counselor educators' research productivity represented in seven categories: (1) journal articles, (2) conference presentations, (3) other published works (e.g., books, monographs, chapters in books), (4) other written works (e.g., grants, training manuals, evaluation reports), (5) scholarly works pertaining to teaching (new courses, new programs, student/program handbooks, interdisciplinary curricula), (6) other professional activities (e.g., workshops, consultations), and (7) professional leadership roles (e.g., editorial board, executive officer of professional organization).

Some of these scholarly activities (e.g., number of papers written, publications, and number of conferences attended) were also used to define research experience and along with other factors, such as research apprenticeship and assisting research projects (Bieschke et al., 1996; Love et al., 2007). In order to approach research experience and research productivity from a different angle, in the current study, the researcher describes research experience with process factors (e.g., writing manuscripts, preparing presentations, designing studies, collecting and analyzing data, research apprenticeship, and assisting research projects) and research productivity with factors representing the outcomes of the process factors (e.g., number of published articles, presented presentations).

Several studies suggested that RSE was related to research experience (Bieschke et al., 1996; Love et al., 2007) and research productivity (e.g., Kahn, 2001; Kahn & Schlosser, 2010; Kahn & Scott, 1997; Lambie et al., 2014). Morrison and Lent (2014) found a direct significant effect from RSE to research productivity. Kuo et al., (2017) also reported a significant relationship between RSE and research productivity. Furthermore, they discovered failure

avoidance motivation was negatively correlated to research productivity, while extrinsic motivation did not predict research productivity. Lambie and Vaccaro (2011) did not find any significant relationship between RSE and research productivity. Conducting an SEM analysis with a counseling psychology doctoral student sample, Kahn and Scott (1997) also concluded that the relationship between RSE and research productivity as equivocal. In their hypothesized model for RSE, they found that research productivity significantly predicted RSE, but RSE did not significantly predicted research productivity. However, when they tested the modified model to present the data in a succinct manner, there was no direct relationship between RSE and research productivity. Though, they reported that research interest and year in the program significantly predicted research productivity.

Demographic information. In the literature, gender, race/ethnicity, age, year in the program, and career aspirations have been frequently included as the demographic factors related to RSE. In the following sections, the researcher included the findings from past studies using each of these factors in relation to RSE.

Gender. Researchers reported both gender differences on RSE (Kahn & Scott, 1997; Landino & Owen, 1988; Vasil, 1992) and no difference between female and male doctoral students' RSE (Bakken et al., 2010; Bieschke et al., 1996; Dumbauld et al., 2014; Jones, 2012; Lambie & Vaccaro, 2011; Petko, 2012; Wright & Holttum, 2012).

Race/Ethnicity. Even though race and ethnicity has been examined with RSE, no researchers reported significant relationship between race/ethnicity and RSE (Bakken et al., 2010; Lambie & Vaccaro, 2011; Petko, 2012).

Age. Although, in some of the studies, researchers did not find significant relationship between age and RSE (Bieschke et al., 1996; Jones, 2012; Lambie, 2014; Petko, 2012). Lambie

and Vaccaro (2011) reported that age has statistically significant influence on the perceptions of RTE, indicating students between the ages of 21 and 31 had more positive perceptions of RTE compared to students between the ages of 41 to 50 years. Due to RTE's relationship to RSE, this might be interpreted as a potential relationship between age and RSE.

Year in the program. Researchers frequently studied the effects of being a first, second, or third-year doctoral student on RSE. Multiple studies reported significant relationship between year in the program, RSE, and research productivity (Bieschke et al., 1996; Kahn & Scott, 1997; Lambie & Vaccaro, 2011; Lambie et al., 2014; Morrison & Lent, 2014; Petko, 2012). For example, Lambie and Vaccaro (2011) and Lambie et al. (2014) reported that doctoral students in the third year of their program had higher RSE compared to the ones in the first and second years. Additionally, Morrison and Lent (2014) reported a positive relationship between year in the program and RISE.

Career aspirations. Researchers also examined career aspirations, such as academic positions in a large or small university, tenure-track faculty, non-tenure track faculty, non-academic positions in a counseling center, research facility or government agency, in relation to RSE (Kahn & Scott, 1997; Petko, 2012). Like age, researchers reported both relationship (Lambie & Vaccaro, 2011) and no relationship between career aspirations and RSE (Jones, 2012).

Interpersonal

Interpersonal factors of RSE involve factors sourced from an individual's relationship with an individual or group (e.g., peers, mentor, and colleagues). In the process of RSE development relationships such as mentor-mentee and student-peer are critical. In the literature, research mentorship has been the most commonly examined interpersonal factor in relation to

RSE (Lambie & Vaccaro, 2011). Research mentorship studies primarily focused on mentor-mentee working alliance, relationships, tasks, and activities (Hollingsworth & Fassinger, 2002; Kahn, 2001; Morrison & Lent, 2014; Schlosser & Gelso, 2001). In only one study, researchers examined the beliefs regarding mentor's self-efficacy or mentor's verbal and nonverbal behaviors' effect on mentee's self-efficacy (Morrison & Lent, 2014). Therefore, in order to expand our understanding of the effects of mentoring relationship, in this study, other-efficacy, and relation-inferred research self-efficacy (RISE) are also included under the interpersonal factors.

Research mentorship. Mentor, advisor, major professor, committee chair, and dissertation chair are different terms that have been used to describe the more experienced professional influencing the trainee. Schlosser and Gelso (2011) specified that mentor and advisor are the most commonly used terminology for the key faculty working with the researcher in training. They also mentioned that although different researchers use advisor and mentor interchangeably, there are slight differences in the shared meaning of these terms. An advisor can be defined as "the faculty member who has the greatest responsibility for helping guide the advisee through the graduate program" (Schlosser & Gelso, 2001, p. 158). A mentor, on the other hand, can be defined as a more experienced professional who serves as a role model, resource, coach, and sponsor provides knowledge, advice, challenge and support, direction, and feedback to the less experienced professional regarding professional competence and identity as well as career plans and interpersonal development (Noe, 1988; O'Neil and Wrightsman, 2001).

Allen and Eby (2007) analyzed these two terms in regard to their context, primary scope of influence, degree of mutuality, relationship initiation, relationship closeness, required interaction, and power differences. They reported that while both mentorship and advisory

relationship could happen in academic context, mentorship could also exist in community and workplace contexts. Both terms have influence on academic, career, and personal factors, and mentorship also has a social influence. Advisory relationship is a formal relationship, while mentorship can be both formal and informal. Power difference in advisory relationship is large, whereas it can vary small to large in mentorship relationship. Furthermore, mentorship involves a more individual investment on the side of mentor, and mutual affection exists between the mentor and the mentee. Thus, due to its greater range of responsibilities and investment, in this study researcher will use the term mentor; however, knowing the interchangeable nature of these two terms advisory relationship literature related to RSE is also included.

Mentorship theory and models. Further exploring mentorship theories could help the reader understand conceptual structure of mentorship. There are four primary mentorship theories and models; Mentoring Framework (Hunt & Michael, 1983), Model of Mentoring Functions (Kram, 1985), Model of Predictive Mentoring (Burke et al., 1993), and Sources of Variance Theory of Mentoring (O'Neil & Wrightsman, 2001).

Hunt and Michael's (1983) Mentoring Framework uses four interrelated factors (cultural context, mentor and mentee characteristics, stage of mentoring relationship, and outcomes of mentoring relationship) to provide a comprehensive perspective on mentoring relationship. Cultural context includes factors like organizational culture, type of profession, accessibility of professional relationships and networks, and mentoring relationship. Mentor and mentee characteristics involve aspects like race, age, sex, and position differences. Stages of mentoring relationship factor included (a) the initiation stage, (b) protégé stage, (c) break-up stage, and (d) lasting friendship. The protégé stage is the working stage where mentoring relationship happens.

Lastly, the outcomes for both mentor and mentee (e.g., more publication, faster promotion, job satisfaction) were included in the outcomes of the mentoring relationship factor.

Differing from Mentoring Framework, Kram's (1985) Model of Mentoring Functions mainly focuses on the tasks of mentorship. This model identifies two main functions in the mentoring relationship: career-related functions and psychosocial functions. Career-related functions include behaviors such as preparing and supporting the mentee for success in their profession (e.g., advising, coaching, networking). On the other hand, psychosocial functions involve actions and behaviors assisting the mentee to develop an overall professional identity (e.g., attitudes, values, sense of mastery).

Building upon Kram's (1985) model, Burke et al.'s (1993) Model of Predictive Mentoring uses the mentoring tasks but also includes more contextual structure. This model uses four general factors to describe mentoring relationship; personal characteristics of the mentor (e.g., age, sex, education level), personal characteristics of the mentee (e.g., age, sex, education level), perception of similarity of mentor and mentee (e.g., personality, background, ambition, education and recreational activities outside of work), and descriptive characteristics of the mentoring relationship.

Lastly, Sources of Variance Theory of Mentoring (O'Neil & Wrightsman, 2001) conceptualizes the mentoring relationship under four factors: mentoring, relational parameters, correlates, and tasks. Mentoring includes four main categories: (a) mentor roles, (b) personality characteristics, (c) situational/environmental variables, and (d) diversity variables. Relationship parameters are (a) degree of mutuality or reciprocity, (b) comprehensiveness or breadth of the relationship, (c) congruence (degree of match between mentor and protégé's needs, values, and goals), and (d) diversity sensitivity. Correlates, what actually emerges between mentors and

mentees, are defined as (a) interpersonal respect, (b) professionalism–collegiality, (c) role-fulfillment, (d) power, (e) control, and (f) competition. Lastly, the task includes activities defining the working relationship: (a) making the critical entry decision, (b) building mutual trust, (c) taking risks, (d) teaching skills, (e) learning professional standards, and (f) dissolving or changing the relationship.

Research mentorship as a complex critical concept for RSE. All the discussed models and theories highlight mentoring relationship (mentorship) as a complex multifaceted concept, and its potential outcomes require specified attention. Moreover, the definition, tasks, and process of mentoring relationship changes from one context to the other (Allen & Eby, 2007). Thus, building upon mentorship definition, theories, and models, research mentoring can be defined as a relationship in which a more experienced researcher serves as a role model, resource, coach, and sponsor to provide knowledge, advice, challenge and support, direction, and feedback to the less experienced researcher regarding research competence, identity, and related career plans.

Research mentoring plays a critical role in professional development of doctoral students as successful researchers (Borders et al., 2012; Hollingsworth & Fassinger, 2002). In a research mentoring relationship, mentor assists mentees in developing adequate research competencies to engage in scholarly activities (e.g., research inquiry, academic writing, and scholarly presentations) by modeling, collaborating, coaching, and encouraging (Atieno Okech et al., 2006; Borders et al., 2012; Briggs, 2006; Gelso 1997; Lambie & Vaccaro, 2011).

Researchers reported that research mentoring improves students' research interest and scholarly activities (Kuo et al., 2017) and positively associated with RSE (Morrison & Lent, 2014; Hollingsworth, 2002). On the other hand, Petko (2012) examined the psychosocial and

career research mentoring factors with counselor education students and reported a small inverse correlation between RSE and research mentoring. In a study with psychology students, Kahn (2001) reported that there was no significant relationship between RSE and student perceptions of the adequacy of their research mentorship. Despite inconsistent results from different studies with different samples, research mentorship is a critical factor related to RSE.

Other-efficacy. In their Tripartite Model of Relational Efficacy Beliefs, Lent and Lopez (2002) defined other-efficacy in a dyadic relationship as each partner's views of the other's efficacy. Based on this definition, other-efficacy in a research mentoring relationship can be defined as mentee's perception of the mentor's research efficacy and the mentor's perception of the mentee's research efficacy. To date, Morrison and Lent's (2014) study is the only one explored ROE in relation to doctoral students' RSE in an interdisciplinary group (e.g., college of education, behavioral and social science, school of public health).

Relation-inferred self-efficacy (RISE). In the Tripartite Model of Relational Efficacy, Lent and Lopez also defined RISE as each partner's beliefs about how their efficacy is viewed by the other partner. Similarly, in a mentoring relationship, RISE can be defined as each partner's beliefs about how their research efficacy is viewed by the other partner (Morrison & Lent, 2014). Morrison and Lent (2014) reported that RISE had a direct link with doctoral students' RSE, suggesting that doctoral students demonstrate higher scores on RSE when they perceived that their mentor trusted their research skills. They also reported a positive significant relationship between ROE and RISE. Furthermore, the path analysis revealed that ROE linked to RSE through research mentorship (advisory working alliance) and RISE.

Systemic

In this section, the researcher covered a very limited version of McLeroy et al.'s (1988) institutional, community, and public policy levels by collapsing all under the systemic level factors. It is important to emphasize that, while the researcher explores the systemic factors as a separate section here, all other factors that have been discussed so far are also part of the systemic context. However, to have a clearer understanding in this level, the researcher specifically focused on systemic factors that has not been explored in the intrapersonal or interpersonal levels, such as perceptions of research training environment (RTE).

Research training environment (RTE). Based on Gelso's (1993) Theory of Research Training Environment, research training environment (RTE) can be defined as "all of those forces in graduate training programs (more broadly, the departments and universities within which the programs are situated) that reflect attitudes toward research and science" (p. 470). Gelso (1979; 1986; 2013) identified 10 RTE ingredients effecting students research interest, motivation, anxiety, productivity, and RSE: (a) faculty modeling of appropriate scientific behavior, (b) reinforcement of student research, (c) early involvement in research, (d) separation of statistics and research, (e) facilitation of students' 'looking inward' for research ideas, (f) presentation of the concept of science as a partly social experience, (g) teaching all experiments are flawed and limited, (h) a focus on varied investigative styles, (i) wedding of science and clinical practice, and (j) focus on training needs for agency-based research. Later, the tenth ingredient (training needs to focus on how research gets done in agencies) is taken out because it was not applicable to most students (Royalty, Gelso, Mallinckrodt, & Garrett, 1986), and the fourth ingredient (untying of statistics and research) changed to teaching relevant statistics and the logics of design (Gelso, 1993).

Faculty modeling includes modeling of appropriate scientific behavior, faculty members' excitement, and involvement in research as well as their willingness to include students into their process by sharing their successes and failures while collaborating with them. *Reinforcement of student research* includes training programs' paying attention, recognizing, supporting, and rewarding students' research interests and activities. *Early involvement in research* suggests organization of RTE in a manner that provides students with developmental level appropriate opportunities from the beginning of the training. *Teaching relevant statistics and logics of the designs* highlight the training programs' role in helping students recognize the differentiation between statistics and research and being a good researcher does not require higher levels of statistics knowledge. *Facilitating students' 'looking inward'* for research ideas stresses the importance of encouraging and supporting students to conduct research on topics they are interested in rather than looking outside for ideas. *Presenting science as a partly social experience* encourages training programs to create research involvement opportunities (e.g., research mentorship, labs) that are also socially and interpersonally involved. *Teaching that all experiments are flawed and limited* underlines training programs' role in modeling and teaching students that all research is flawed and limited, and a single study is only a step toward a full length of stairs. *Focusing on different investigative styles* encourages inclusion and modeling the use of a wide range of methods and designs in a training program to prevent favoritism between research designs or methods. And lastly, *wedding of science and clinical practice* focuses on demonstration of how research and practice are connected and feed onto each other for ideas and empirically proven practices.

In multiple studies, researchers focused on universities, departments, and more specifically graduate training programs as RTEs and obtained results indicating the impact of

RTE on RSE (Gelso, Mallinckrodt, & Judge, 1996; Gelso et al., 2013; Kahn, 2001; Kahn & Schlosser, 2010; Lambie & Vaccaro, 2011; Morrison & Lent, 2014; Phillips & Russell, 1994).

Lambie and Vaccaro (2011) reported that the relationship between RTE and RSE was not significant in a counselor education doctoral student sample. On the other hand, Morrison and Lent (2014) reported RTE was linked to RSE indirectly through other-efficacy, the advisory working alliance, and RISE. Studying counseling psychology students, Kahn (2001) reported the RTE explained a small but significant amount of variance in the RSE, indicating the more positive the RTE perception the higher the RSE scores were. Again, utilizing a sample of counseling psychology students, Phillips and Russell (1994), Kahn and Miller (2000), and Kahn and Schlosser (2010) reported a positive correlation between RSE and RTE, suggesting students with positive RTE have significantly higher RSE. In a study with doctoral students from counseling, clinical, and school psychology, Gelso et al. (1996) also reported statistically significant positive relationships between all nine ingredients of RTE and RSE.

Conclusion

Given that RSE is critical for training researchers and development of counselor education field, in this chapter, the researcher provided an overall review of the RSE literature. RSE appears as a complex concept requiring in-depth exploration with other factors not only at the intrapersonal level, but also interpersonal and systemic levels. Using this three-layered structure, the researcher reviewed all factors studied in relation to RSE. These factors are research interest, research motivation, research training, research productivity, research experiences, and demographic information at the intrapersonal level; mentoring relationship, research mentorship, other research efficacy, and relation-inferred research self-efficacy at the interpersonal level; and perceptions of research training environment at the systemic level.

Despite inconsistent results from different studies with different samples, all these factors concluded to be critical for RSE development. Studies exploring RSE mostly used qualitative and quantitative designs to explore the complex structure of RSE. Due to limitations of qualitative and quantitative designs to manage complete picture of RSE phenomenon, in majority of these research efforts, researchers focused on partial relationships of among the factors and RSE. While these investigations provided a wealth of information, none of them provided a holistic picture of RSE. Given the critical need for a holistic understanding of RSE, in this study, the research used a mixed-methods design allowing both exploration and examination of the holistic picture of RSE. In the following section, the researcher presented the details of the proposed methodology.

CHAPTER III

METHODOLOGY

In this chapter, the researcher describes the method that is used to address the proposed research question. The chapter includes the research design, Concept Mapping (CM, Kane & Trochim, 2007), by detailing the CM steps: preparing for concept mapping, generating the statements, structuring the statements, concept mapping analysis, interpreting the maps, and utilization. Next, the researcher discusses the testimonial validity, and concludes the chapter with a short summary.

Research Design

In this study, the researcher aims to obtain a conceptual understanding for research self-efficacy (RSE) from counselor education doctoral students' perspectives. In order to explore how counselor education doctoral students from CACREP-accredited programs construe their experiences of RSE, the researcher answers the following research question: What are the factors of counselor education doctoral students' RSE in CACREP-Accredited doctoral programs? Using a mixed-methods approach, Concept Mapping (CM; Kane & Trochim, 2007), the researcher: (a) compiled a list of psychometrically-sound instruments that have been used to measure the factors studied with RSE, (b) explored additional factors relevant to RSE created by the study participants, (c) examined the meaning and importance of all of these items to a group of counselor education doctoral students, (d) explored the interrelatedness among these items, and (e) established an empirical and holistic conceptualization of the concept of RSE.

Concept Mapping

As a mixed-methods design, Concept Mapping (CM) provides an opportunity to researchers to obtain a purer understanding of the studied phenomenon from the participants'

perspectives. Through involving participants in multiple rounds of data collection, CM allows stakeholders to manage the inherent complexity of the phenomenon, while giving the researcher an opportunity to merely observe participants' shared realities without losing the uniqueness of each individual's contributions (Kane & Trochim, 2007; Trochim, 1989). Researchers are also able to detect how each component defining the phenomenon is related to one another and depict a holistic picture of complex concepts (Kane & Trochim, 2007; Trochim, 1989). As a result, CM permits researchers to obtain visual representations of the studied phenomenon and its factors as well as empirical results. The visual format of the results makes the understanding and presentation process more manageable.

To address research question of the current study, the researcher could use CM in two different ways. First, the researcher could explore participants' (i.e., doctoral students from CACREP-accredited counselor education programs) perspectives by asking them to produce as many relevant ideas as describe contributing factors to their RSE. Second, the researcher could present the relevant components of RSE by using existing literature as well as adding more ideas and statements by asking participants. Despite the existing research findings on components that might contribute to a counselor education doctoral student's RSE (Jones, 2012; Kuo et al., 2017; Lambie &Vaccaro, 2011), doctoral students' perspectives have not been the focus of these examinations. Both ways would contribute to the RSE literature; however, utilization of both previous studies and the doctoral students' perspectives might give a more inclusive and holistic understanding of the RSE phenomenon. Thus, by using the second way, the researcher utilized existing literature, while including counselor education doctoral students' unique experiences and perspectives on the literature-driven components and their own development of RSE.

Concept Mapping Steps

Kane and Trochim (2007) presents that CM consists of six steps: (1) Preparing for Concept Mapping, (2) Generating the statements, (3) Structuring the statements, (4) Concept mapping analysis, (5) Interpreting the maps, and (6) Utilization. Utilization step was out of the scope of current study. Below, researcher described all the rest of the steps and presented the outline for the current study.

Step 1: Preparing for Concept Mapping

In this step, the researcher completed two tasks: determining focus of the study and participants and sampling (Kane & Trochim, 2007).

Focus of the study. This task includes specifically defining the focus that is used during the generation of statement pool and the brainstorming processes (Kane & Trochim, 2007). The focus of the current study was to create statements affecting counselor education doctoral students' research self-efficacy. The researcher generated a statement pool from a compiled list of RSE-related instruments and their items. Then, during the brainstorming process, she asked participants to create new statements based on their experiences and reviewed the statement pool derived from the literature.

Statement pool generation. To date, researchers studied RSE in relation to demographic information (Bakken et al., 2010; Büyükoztürk et al., 2011; Jones, 2012; Lambie & Vaccaro, 2011; Love et al., 2007; Odaci, 2013; Wright & Holttum, 2012), research interest (Bieschke et al., 1996; Leong & Zachar, 1991; Royalty et al., 1986), research motivation (Deemer et al., 2010; Strube, 1986; Vallerand et al., 1992), research productivity (Kahn & Scott, 1997; Lambie et al., 2014), research training (Dumbauld et al., 2014; Jones, 2012; Lambie et al., 2014; Miller, 2006; Wright &Holttum, 2012), research experience (Bakken et al., 2010; Büyükoztürk et al., 2011;

Lambie & Vaccaro, 2011; Love et al., 2007; Odaci, 2013; Wright & Holttum, 2012), research mentorship (Kahn & Schlosser, 2010; Morrison & Lent, 2014; Schlosser & Gelso, 2001; 2005; Schlosser & Kahn, 2007), other efficacy (Morrison & Lent, 2014), relation-inferred self-efficacy (Morrison & Lent, 2014), and perceptions of the research training environment (Kahn & Schlosser, 2010; Lambie & Vaccaro, 2011; Morrison & Lent, 2014; Phillips & Russell, 1994; Schlosser & Kahn, 2007). Upon reviewing the literature on each of these factors and corresponding instruments, the researcher obtained 26 instruments that have been used to measure these 10 factors and nine instruments used to measure RSE (the 11th factor), a total of 35 instruments that conceptualizes a holistic picture of RSE (i.e., intrapersonal, interpersonal, and systemic factors).

Of the 35, nine instruments focused on RSE, three on research interest, three on research motivation, three on research productivity, nine on research mentorship, one on other efficacy, one on relation inferred self-efficacy, and six were on research training environment (See Appendix A for detailed list of instruments for each component). Some of these instruments were shortened or extended versions of the other ones from the list of 35. In order to improve psychometric properties of the instruments and their theoretical correspondence, researchers either started with a larger pool of items and shortened the original instrument (e.g., Kahn & Miller, 2000; Morrison & Lent, 2014) or started with a shorter item pool and added new items to the instrument (e.g., Gelso et al., 1996). In this study, because it was important to include instruments that measure the components of RSE adequately, the researcher used the following criteria to select the instruments that are included: (1) conceptually addressing one of the 11 factors and (2) psychometric robustness. In the following sections, the instruments, items of which are included in the statement pool, are presented.

Research self-efficacy. Upon reviewing all 9 instruments measuring RSE, the researcher selected five of them to be reviewed based on their conceptual structure and psychometric properties.

Self-Efficacy in Research Measure (*SERM*; Phillips & Russel, 1994) is a 33-item RSE instrument measuring participants' level of competence in performing each task or belief on the suggested research skills. SERM has four subscales focusing on specific research skills (i.e., research design, practical research skills, quantitative and computer skills, and writing skills). Sample items from the instrument are "I believe I have a good ability to use multivariate statistics (e.g., multiple regression, factor analysis, and so on)" and "I believe I have a good ability to operationalize variables of interest." The authors established SERM's convergent validity through its positive correlations with perceptions of research training environment and research productivity, while SERM scores of advanced graduate students were significantly higher than beginning graduate students, indicating criterion validity. The internal consistency coefficients for the total scale was .96, while coefficients for research design was .90, practical research skills was .83, quantitative and computer skills was .93, and writing skills was .94.

51-item *Research Self-Efficacy Scale* (*RSES*; Greeley et al., 1989) measures participants' confidence in their ability to successfully perform specific research behaviors. Differing from SERM, RSES conceptually focuses on process of conducting research from the beginning to the end, reflected in its four subscales (i.e., conceptualization, implementation, early tasks, and presenting the results). Sample items are "Choose appropriate data analysis techniques" and "Organize collected data for analysis." Bieschke, Bishop, and Garcia (1996) reported RSES's convergent validity through a positive relationship with research interest, while presenting the internal consistency coefficients of .96 for the total scale, and .92 for conceptualization, .96 for

implementation, .75 for early tasks, and .91 for presenting the results subscales. Forester et al. (2004) also reported an alpha coefficient of .98 for the RSES.

Research Attitudes Measure (*RAM*; O'Brien, Malone, Schmidt & Lucas, 1998) is a 23-item instrument measuring participant's confidence in a diverse array of research tasks. RAM has six subscales: (1) discipline and intrinsic motivation, (2) analytical skills, (3) preliminary conceptualization skills, (4) writing skills, (5) application of ethics and procedures, and (6) contribution and utilization of resources. Sample items are "Effectively write a research article on my own." and "Obtain permission from the institutional review board to complete research using human participants.". O'Brien et al. (1998) reported convergent validity for the RAM through its positive correlations with SERM, interest in scientific activities, and research productivity. For internal consistency coefficients of the total RAM, O'Brien et al. (1998), Schlosser and Gelso (2001), and Forester et al. (2004) reported .93, .92, and .89, respectively.

Holden et al. (1999) developed the 9-item *Research Self-Efficacy* (*RSE*) to assess participants' ability to complete specific research activities. Sample items from RSE are "How confident are you that you can review a particular area of social science theory and research and write a balanced and comprehensive literature review?" and "How confident are you that you can formulate a clear research question or testable hypothesis?" Convergent validity of the unidimensional RSE was established through a positive correlation with social worker self-efficacy, while divergent validity was reported via non-significant relationship with social workers' perceptions of personal and professional power. Authors observed significant change in students' RSE scores from the beginning to the end of a single-semester research course, reporting criterion validity. The test-retest reliability of RSE was also reported as .94.

Finally, *Clinical Research Appraisal Inventory* (*CRAI*; Mullikin, Balken, & Betz, 2007) is an 88-item instrument measuring participants' perceived ability to perform the research tasks. Following the typical chronological order of performing clinical research, CRAI consists eight subscales: conceptualizing a study, study design and data analysis, collaborating with others, funding a study, organizing study, managing project staff, responsible conduct of research, and presenting and reporting a study. Sample items from the inventory are "Avoid the violation of statistical assumptions" and "Explain the outcome of given analysis in terms of the originally stated hypotheses or research questions." The authors reported significant relationships between all self-efficacy scales and the current conduct of research as evidence for CRAI's validity, while study design and data analysis, reporting and presenting, and responsible conduct of research, organizing a study, and conceptualizing a study subscales were correlated with prior research experience and level of interest. Authors reported differences among CRAI scores of fellows, assistant professors, and tenured faculty, showing criterion validity. Alpha coefficient for the overall scale was .96, while alpha coefficients ranged from .89 to .97 for the subscales.

Research interest. For research interest, the researcher reviewed all three instruments found in the literature to be included in the current study.

Scientist-Practitioner Activities (*SPI*; Leong & Zachar, 1991) is a 42-item instrument measuring career specialty interest. SPI has two 21-item subscales (i.e., scientist and practitioner), both contain sub-dimensions. Scientist scale included research activities, statistics and design, academic ideas, and teach/guide/edit sub-dimensions, while practitioner scale involved therapy activities, clinical expert/consultant, and tests and interpretations sub-dimensions. Sample items are "How interested are you in presenting research findings at conference?" and "How interested are you in writing an article commenting on research

findings?" For the convergent and divergent validity, authors reported the scientist scale's positive correlation with investigative occupational interests, and negative correlation with social occupational interest. Similarly, practitioner scale was positively correlated to social occupational interests and negatively correlated to investigative occupational interests. Test-retest reliability for the scientist and the practitioner scales were .85 and .93, respectively.

Bishop and Bischke (1994) developed the 16-item *Interest in Research Questionnaire (IRQ)* to measure participants' interest in conducting research after graduation. Sample items are "How interested are you interested in leading a research team?" and "How interested are you interested in having research activities as part of every work week?" Providing support for convergent validity, Bieschke, Bishop, and Herbert (1995) reported a significant relationship between the IRQ and investigative occupational interests. Internal consistency coefficients for the IRQ was .89 (Bishop & Bieschke, 1994) and .94 (Morrison & Lent, 2014).

The *Attitudes Towards Research Scale* (*ATR*; Royalty et al., 1986) is a 5-item instrument measuring participants' interest in conducting research. Sample items from ATR are "I would prefer to have the option of completing my doctoral training without being required to complete research projects" and "I have a strong interest in doing research."

Research motivation. For the motivation factor, the researcher included Deemer et al.'s (2010) *Research Motivation Scale (RMS)*. RMS is a 19-item instrument with three subscales (i.e., intrinsic reward, extrinsic reward, and failure avoidance). Sample items from RMS are "I conduct research to earn the respect of my colleagues" and "I love to learn new things through research." Authors reported convergent validity through positive correlations between participants' intrinsic and extrinsic rewards, and academic motivation. Divergent validity, on the other hand, established by the non-significant relationship between the extrinsic reward and fear

of failure. Authors reported reliability coefficients for intrinsic reward scale as .90, for extrinsic reward scale as .78, and for failure avoidance scale as .79.

Research productivity. For research productivity, two instruments are included in the current study.

Royalty and Magoon (1985) developed the *Scholarly Productivity Survey (SPS)* to measure participants' productivity in the scientific area. SPS include 147 items represented in 10 categories (i.e., demographics, undergraduate training, first few years after doctorate, present position, activity preferences, attitudes towards research, subjective feelings, behaviors, sources of ideas for research, and facilitating aspects of the environment). Content validity for the SPS was established with three judges who grouped items into the 10 categories with almost 100% inter judge agreement. Test retest reliability coefficients ranged from .34 to .97 with a median of .72.

Nine-item *Scholarly Activity Scale* (*SAS*; Kahn & Scott, 1997) measures participants' current research involvement as well as previous research accomplishments. Sample items are "How many articles have you submitted to refereed journals?" and "How many presentations have you made at local, regional, or national conventions?" Authors reported convergent validity through moderate correlations between the SAS, and interest in research and research career goals. Kahn (2001) reported .70 and Morrison and Lent (2014) reported .74 for the internal consistency coefficient of SAS.

Research mentorship. The researcher reviewed two instruments included in the current study for the research mentorship.

Advisory Working Alliance Inventory (*AWAI*; Schlosser & Gelso, 2001) is 30-items instrument measuring advisee's perceptions of the advisory working alliance in graduate school.

Sample items are “My advisor offers me encouragement for my accomplishments” and “I do not feel respected by my advisor in our work together.” Authors reported AWAI’s construct validity through the positive correlations between the total scale and the three subscales (i.e., rapport, apprenticeship, identification-individuation) as well as positive correlation between AWAI and the Advisor Rating Form (altered from Corrigan & Schmidt’s (1983) Counselor Rating Form) and RAM (O'Brien et al., 1998). AWAI was also positively correlated with the advisee's current attitudes toward research and to their research self-efficacy and attitudes towards research. Authors reported the internal consistency coefficients for the total AWAI as .95, .93 for rapport, .91 for apprenticeship, and .77 for the identification-individuation subscales.

Research Mentoring Experiences Scale (*RMES*; Hollingsworth & Fassinger, 2002) is a 29-item instrument with two subscales: psychosocial mentoring and career mentoring. RMES measures participants’ perceptions of their mentoring relationship. Sample items from the instrument are “In your research relationship with a specific faculty member, to what extent does he or she pay attention to discussing your research-related goals?” and “In your research relationship with a specific faculty member, to what extent does he or she pay attention to helping you develop research ideas?” For validity evidence, authors reported positive correlation between RMES and research self-efficacy, attitudes toward research, and research productivity. For reliability, alpha coefficients for the RMES were .74 (Hollingsworth & Fassinger, 2002) and .94 (Jones, 2012).

Other-efficacy. As the only instrument to measure the other efficacy, *Research Other-Efficacy Scale* (*ROES*; Morrison & Lent, 2014) is included in the current study. ROES measures participants’ perceptions of their mentors’ efficacy. Modifying from SERM (Phillips & Russell, 1994), authors reported an internal consistency coefficient of .88 for the 12-item ROES. Sample

items are “I believe my advisor has a good ability to use statistical packages (e.g., SPSS–X, SAS, and so on)” and “I believe my advisor has a good ability to design and conduct qualitative studies.”

Relation inferred self-efficacy. *Relation-Inferred Research Self-Efficacy Scale* (*RISES*; Morrison & Lent, 2014) is the only instrument to measure participants’ perceptions of their mentors’ beliefs about their efficacy. The 11-item RISES is also a modified from altered SERM (Phillips & Russell, 1994) with a reported internal consistency coefficient of .95. Sample Items are “I believe my advisor thinks I have a good ability to formulate hypotheses” and “I believe my advisor thinks I have a good ability to select an appropriate approach to analyzing qualitative data.”

Research training environment. For RTE, *Research Training Environment Scale-Revised* (*RTES-R*; Gelso, Mallinckrodt, & Judge, 1996) is the only scale in the literature and included in this study. The 54-item RTES-R measures participants’ perceptions of research training environment based on nine subscales (i.e., faculty modeling of appropriate scientific behavior, reinforcement of student research/scholarly activity, early and minimal threatening student involvement in research, untying of statistics and research, a focus on varied investigative styles, wedding of science and clinical practice, facilitating students’ “looking inward” for research ideas, a concept of science as a partly social experience, and teaching that all experiments are flawed and limited). Sample items are “Many of our faculty do not seem to be very interested in doing research” and “The statistics courses we take do a good job, in general, of showing students how statistics are actually used in psychological research.” Authors reported validity evidence for the RTES-R through all subscales’ significant correlations with changes in research attitudes and RSE. The reliability coefficients for the total RTES-R was .90

and for the subscales ranged from .57 to .88., while test-retest reliability scores ranged from .74 to .94.

Research training and research experience. In the literature, research training and research experience are commonly covered by open-ended questions in demographic questionnaires (Bakken et al., 2010; Büyükoztürk et al., 2011; Lambie & Vaccaro, 2011; Love et al., 2007; Odaci, 2013; Wright & Holttum, 2012). Thus, the researcher included statement versions of these questions into the statement pool. Sample items are "How many qualitative research courses have you taken in your doctoral program?" and "How many manuscripts are you preparing to submit to a journal currently?"

Overall, the 16 instruments included 578 items that the researcher and her dissertation chair edited and synthesized into 247 items to eliminate redundancy and repetition. Next, these 247 items were presented to the participants in the next step.

Participants and sampling. Identifying the participants and defining the sampling strategy were the second essential part of the preparation step. In accordance with the purpose of this study, participants were doctoral students who are at least 18 years of age and currently enrolled in CACREP-accredited counselor education doctoral programs. In terms of sample size, CM does not limit the number of participants required; however, Kane and Trochim (2007) suggest having 8 to 15 participants to ensure data saturation. Additionally, CM does not require all participants to be involved in all data collection steps. For example, not all participants from Step 3 (Structuring the statements) have to participate in Step 5 (Interpreting the maps). On the other hand, the process becomes more meaningful for the participants who take part in all the steps than those who only take part in some.

For recruitment, the researcher announced the study with an email to all the CACREP-accredited doctoral program directors and to the professional email listservs (e.g., CESNET; see Appendix C for the Recruitment E-mail). Additionally, snowball sampling was used as a recruitment method as participants were asked to forward the study information to the potential participants in their programs. The recruitment email had a link for volunteer participants to fill out the demographic information section including their mailing address for the data collection packets to be sent (see Appendix C).

Following Kane and Trochim's (2007) recommendation of involving 8 to 15 participants, in this study, the researcher recruited a total of 24 counselor education doctoral students as participants (see Chapter V for detailed numbers and demographics of the participants in different rounds). Since the study required a considerable time commitment in both Step 2 (90 minutes), Step 3 (2 hours), and Step 5 (2 hours), participants received a $10 Amazon gift card for their participation in each round. This study was funded by Virginia Association for Counselor Education and Supervision (VACES).

Step 2: Generation of the Statements

After defining the focus and participants of the study, generation of the statements step was where the participants were involved for the first time. In this step there were also two tasks to be completed: brainstorming and idea analysis.

Brainstorming. Brainstorming task aims to gather all the knowledge and opinions to represent the entire conceptual domain of the studied phenomena (i.e., RSE; Kane & Trochim, 2007). For the brainstorming task, the researcher met with a focus group of 14 counselor education doctoral students for 90 minutes. In this focus group, the researcher provided the definition of RSE and a short review of the Ecological Model. Then, the researcher provided the

following prompt to the participants and asked them to generate as many statements as possible based on their experiences: "_____ had/have been affecting my research self-efficacy in the process of my doctoral studies."

Participants created total of 209 items. Then, the researcher presented the statement pool obtained in Step 1 to the participants and asked them to review each statement to examine if the statements had/have been a factor that affected their RSE during their doctoral studies. Participants are asked to reach 95% ($p < .05$) consensus regarding the inclusion and exclusion of each item to the concept mapping process. By asking participants to generate statements based on their experience, the researcher aimed to capture participants' unique and uninfluenced experiences along with all the components previously studied by researchers in relation to RSE. None of the statements offered to be removed by more than two participants and after discussions participants decided to keep all the statements. The focus group session was recorded for the researcher to review the discussion as needed.

Idea analysis. Idea analysis process includes review of the statement pool and the additional items created by the participants to make sure that the final list of items does not involve redundancy or repeated items. While there is not a limit to the number of final list of statements, Kane and Trochim (2007) suggested having 100 or fewer statements for practicality in the sorting and rating steps to prevent participant attrition and burnout. However, there are examples in literature using over 100 statements in CM based on the complexity of the studied phenomenon (Kemer, Borders, & Willse, 2014; Kemer, Pope, & Neuer Colburn, 2017). Considering the comprehensive nature of this study, the researcher found a balance between including all 11 factors (i.e., RSE, research interest, research motivation, research productivity, research training, research experiences, demographic information, research mentorship, other

efficacy, relation-inferred self-efficacy, and perceptions of the research training environment) as well as additional factors defined by the focus group participants, and having a practical number of statements (e.g., 200). In summary, the researcher had a final list of statements that represent the conceptual domain of studied phenomena, the RSE. During the creation of the final list, the researcher and the researcher's dissertation chair worked together. After the researcher created the list of statements, the chair reviewed and provided feedback about the list of statements generated by the researcher. Please see Chapter IV for the final number and set of statements for the sorting and rating tasks.

Step 3: Structuring the Statements

In Step 3, the researcher asked participants to complete sorting and rating tasks to obtain an understanding on the interrelationships among the statements as well as the relative importance of each statement to each participant, which constituted the conceptual domain based on the participants' experiences (Kane & Trochim, 2007). The data collected in this step was the primary data for the analyses and used to develop the conceptual domain of counselor education doctoral students' RSE. A data collection packet including instructions for the sorting and rating tasks was mailed to each participant (see Appendix F).

Sorting. For the sorting task, statements were printed onto small cards and provided with a stack of empty envelopes. In the directions, participants were asked to review and put the statements into conceptually meaningful groups based on their own experiences and perspectives (Kane & Trochim, 2007). Participants were also instructed that each statement can only be included in one group, although a statement can be a group by itself, and each participant must create more than one group of statements. After the sorting process was completed, participants

put each group of statements in an envelope and label each group representing the conceptual content.

Rating. For the last task of this step, the researcher printed the statements onto a rating form and asked participants to rate each statement based on their current importance for their RSE. For rating, following Bandura's (2006) suggestion, the researcher used a Likert scale ranging from 0 (not important et al) to 10 (very important).

Step 4: Concept Mapping Analyses

In this step, the researcher analyzed the data from Step 3 to obtain conceptual and visual representations of counselor education doctoral students' RSE. Using the sorting and rating data, the researcher created two maps: (a) the point map, and (b) the cluster map. Analyzing the data from the sorting task, the researcher created a Group Similarity Matrix (GSM) to run Multidimensional Scaling (MDS) and Hierarchical Cluster Analysis.

Group similarity matrix (GSM). Data from the sorting task was used to create GSM using R editor (Grayson, 1992; RStudio Team, 2015) to demonstrate the relational structure of the counselor education doctoral students' RSE. The GSM included as many rows and columns as there are statements. The number of people placing the pair of statements from the row and column into the same group were demonstrated with the numbers at the intersection of the rows and columns. These numbers may range from "0" to the total participant number. The higher numeric values in the GSM suggested that those statements were conceptually similar to each other, while lower values implied that those statements were conceptually discrete (Trochim, 1989). The GSM was the input for the multidimensional scaling analysis to create the point map of counselor education doctoral students' RSE.

Multidimensional scaling (MDS – The point map). The researcher generated the point map by inputting the GSM into a two-dimensional nonmetric MDS analysis. Although a number of solutions (1 to n-1 dimensional) could have been fitted to decide which dimensional solution is most suitable to the data, the researcher followed Kane and Trochim's (2007) recommendation to start with a two-dimensional solution. The researcher obtained a stress value for the fit of two-dimensional solution. The range of stress values for the majority of concept mapping studies falls between 0.205 and 0.365 (Kane & Trochim, 2007). A stress value closer to or higher than 0.365 may indicate that the two-dimensional solution was not complex enough to adequately represent the data, or that there was sizable variability in how participants sorted the statements (Kane & Trochim, 2007). The researcher used these guidelines to determine if there was a higher dimensional solution for the GSM required to be generated, even though solutions beyond two-dimensional output are usually difficult to read.

Hierarchical cluster analysis (The cluster map). To create the cluster map, the researcher input the two-dimensional (X-Y) MDS coordinate values into a hierarchical cluster analysis consistent to the point map (Kane & Trochim, 2007). To make the cluster map useful in interpreting distance-based data, the researcher used the Ward's algorithm (Kane & Trochim, 2007). While there might be as many clusters as the number of statements, there are typically 3 to 20 clusters in a concept map (Trochim, 1989). In this study, the researcher examined the point map along with the dendrogram obtained from cluster analysis to see if any particular number of clusters were evident and determined the number of clusters in collaboration with her dissertation chair. Next, the researcher determined if the statements in each of these clusters represented a conceptually meaningful list of preliminary clusters and the cluster map. After completing the preliminary structure with the dissertation chair, the researcher sent the

preliminary clusters to an expert auditor and received feedback regarding cluster names and statements conceptual reasonableness. Based on the feedback from the auditor, the researcher prepared the preliminary analysis results to be presented to the participants in Step 5.

Analyzing the data from rating task. The researcher calculated the mean score for each of the statements to analyze the data from rating task. This data was also used to calculate the mean score for each cluster after the final cluster solution was determined. The mean scores for each cluster ratings presented to show the importance of each statement and each cluster to counselor education doctoral students' RSE conceptualization. Furthermore, the researcher used the cluster rating data to explore if the cluster ratings differ for doctoral students based on their year in the program.

Step 5: Interpreting the Maps

In this step, the researcher conducted an online 2-hour focus group to present and discuss the statements and clusters as well as their representation on the maps. The researcher e-mailed the final set of statements along with their preliminary clusters and maps to participants prior to the focus group. At the beginning of the focus group, the researcher informed participants about the focus group agenda (see Appendix G) and gave a brief overview of the focus group process along with the preliminary clusters and their statements. Each map was introduced and explained by the researcher and presented for participants' discussion and dialogue to finalize the results from the analyses. Specifically, participants went through each statement grouped into each cluster and their placement on the map to decide on the final clusters. Next, the researcher worked with the participants to determine the most conceptually suitable labels for each cluster and region (Kane & Trochim, 2007). If the participants disagreed on a label, the researcher asked them to work on a consensus for the label for that cluster. The focus group session was

recorded for the researcher to review the discussion as needed. The researcher also kept field notes after the focus group session to list general impressions of the focus group process to further guide explanation of the results.

Step 6: Utilization

The concept maps could be utilized for evaluation, measurement, and planning purposes (Trochim, 1989). Utilization of the maps can change drastically based on the focus of the study and the researcher's creativity. Even though utilization of the maps will be discussed in the implications for future research and training practices, this step is beyond the scope of the current study.

Testimonial Validity

Testimonial validity is a process in which the researcher's interpretation of the data is in check. Throughout CM, the researcher is positioned as a "non-expert." However, since in this study, the researcher was a member of the target participants and the generation of statement include review and analysis of the literature, testimonial validity was even more important. The primary focus of the study was presenting counselor education doctoral students' perception of different factors affecting RSE, thus, the participants were the main interpreters of the concept maps. There were multiple means to ensure the testimonial validity (Bedi, 2006; Elliott, Fischer, & Rennie, 1999; Stiles, 1993). First, the researcher included participants in reviewing, revising, and adding to the literature-based statements in Step 2 (Generation of statements). Step 3 (Structuring the statements) was completed individually by the participants in their own space and time. In Step 4 (Analysis of Concept maps), the researcher worked with her chair and an expert auditor to make sure the underlying structure obtained from the quantitative analyses were as free as possible from the researcher's interpretation. Lastly, in Step 5 (Interpretation of maps),

participants reviewed, discussed, and finalized the results in a focus group and researcher was only the presenter of the results from Step 4 and facilitator of the group process.

Summary

In this chapter, the researcher outlined the research design addressing the research question, concept mapping procedures including preparing for concept mapping, generating and structuring of the statements, data analyses procedures, interpretation of the data, and utilization. In the following chapter, the researcher presents the demographics of the participants as well as results of the concept mapping procedures and analyses.

CHAPTER IV

RESULTS

The purpose of this study was to obtain a richer and more holistic description of the counselor education doctoral students' RSE constructing factors, and the dynamic relationships among these factors. In this chapter, the researcher presents the data collection and analyses results. Specifically, the chapter includes description of the sample, a brief overview of the research procedures, and finally, addresses the research question based on the results.

Concept Mapping Steps Results

Following Kane and Trochim's (2007) guidelines, in the current study, the researcher completed five steps: (1) Preparing for Concept Mapping, (2) Generating the statements, (3) Structuring the statements, (4) Concept mapping analysis, (5) Interpreting the maps. Step six, utilization, was out of the scope of current study. Below, the researcher presents results obtained in each step.

Step 1: Preparing for Concept Mapping Results

In the first step, the researcher finalized the focus statement to be used in the generation of literature based statement pool and as brainstorming prompt for the generation of statement: "_____ had/have been affecting my research self-efficacy in the process of my doctoral studies."

Second, the researcher recruited the participants for the study. Due to the demanding nature of the concept mapping procedures, not all participants partook in all three steps of data collection. To ensure an acceptable number of participants and obtain robust results, the researcher continued recruitment throughout the data collection process. Recruitment process continued over a four months period from October 2019 to February 2020.

Participants in this study were doctoral students from CACREP-accredited counselor education and supervision programs who were at least 18 years of age. Per Qualtrics statistics, a total of 41 individuals indicated interest in participating in the study and started the informed consent on the survey page. Out of 41, one participant opted out by not agreeing to the informed consent, while four did not return the researchers emails about participation and twelve decided not to take part due to time restriction and other responsibilities at different steps of the study. As a result, a total of 24 participants attended at least one of the three data collection steps. In concept mapping while it is preferred all participants to complete all three steps of data collection, as mentioned before, not all participants have to take part in every step of the process (Kane & Trochim, 2007). In the current study, two participants attended all three steps of data collection, seven attended both first and second steps, two attended both second and third steps, five attended just first step, seven attended only second step, and one participant attended only third step.

Out of 24 participants, 15 were female (62.5%) and nine were male (37.5%) with an average age of 32.17 (*SD* = 8.21; range = 23-59). Sixteen participants reported being White or Caucasian (66.7%), while three identified as Black or African American (12.5%), one was Asian (4.2%), one was Middle Eastern (4.2%), one was Hispanic and White or Caucasian (4.2%), one was Black or African American and White or Caucasian (4.2%), and one participant did not specify a race category and reported as "other" (4.2%). Among participants, two were in the first semester (8.3%), three completed one semester (12.5%), five completed three semesters (20.8%), three completed four semesters (12.5%), one completed six semesters (4.2%), four completed seven semesters (16.7%), two completed eight semesters (8.3%), one completed nine semesters (4.2%), and one completed more than 10 semesters (4.2%) in their doctoral program.

Four participants indicated that they have not completed any research and statistics course in their doctoral program (16.7%), while two completed one (8.3%), three completed two (12.5%), six completed three (25%), two completed fours (8.3%), and seven participants completed more than five research and statistics courses in their doctoral program (29.2%). When asked the number of research projects worked on in the doctoral program, two indicated having worked on zero project (8.3%), while four worked on one (16.7%), one indicated working on two (4.2%), four indicated working on three (12.5%), and ten indicated working on more than five research projects (41.7%). Majority of the participants did not have any publications in their doctoral program (54.2%), while three participants indicated having one (12.5%), another three indicated having two (12.5%), two indicated having three (8.3%), one had four (4.2%), and lastly two participants indicated having more than five publications in their doctoral program (12.5%). Out of 24, 16 participants indicated that they would like to work in a tenure track professor position after completing their doctoral degree (66.7%), two were interested in non-tenure track faculty positions (8.3%), eight were interested in adjunct faculty positions (33.3%), 12 were interested in counselor positions (50%), and five were interested in administrative positions (20.8%). Participants also answered a Likert-scale question reporting their familiarity with RSE. On a Likert-scale ranging from 1(not familiar at all) to 5 (extremely familiar), participants' responses had a mean score of 1.92 (*SD* = .84; range = 1- 4). Please see a more detailed information on the participant demographics for each step below.

Step 2: Generation of the Statements

Out of 41, 14 participants participated to the focus group for the generation of statements resulting in a 34% response rate. Eight of these fourteen participants joined the focus group online and six participated in-person. Out of 14 participants of generation of statements step,

nine were females (64.3%) and five were males (35.7%). Participants' ages ranged from 23 to 59 with average age of 30.6 (*SD* = 9.06; range = 23-59). Three participants self-identified as Black or African American (21.4%), one as Asian (7.1%), nine as White or Caucasian (64.3%), and one participant did not specify a race category and reported as "other" (7.1%). All demographic information for the generation of the statements step is included in Table 1 (see Appendix H).

In the focus group for the generation of statements, the researcher followed two main procedures. First, utilizing the brainstorming prompt, 14 participants generated 209 statements that had/have been affecting their research self-efficacy in the process of the doctoral studies. Then, upon reviewing the 247-item statement pool the researcher obtained from the RSE-related instruments, participants discussed keeping or removing some of the statements based on the statements' influence on their RSE. There were 35 statements suggested to be removed by two of the participants, seven statements suggested to be removed by three of the participants, and five statements suggested to be removed by four of the participants, and one of the items suggested to be removed by six of the participants. After discussion of each statement, the focus group participants consensually decided to keep all 247.

After the focus group, the researcher worked with the dissertation chair to edit and synthesize the participant-generated 209 statements with the 247 literature-driven statements to eliminate duplications and overlaps. This process resulted in 15 unique statements that were not represented in the 247-item statement pool.

Kane and Trochim (2007) suggested having 100 or fewer statements for practicality in the sorting and rating steps to prevent participant attrition and burnout. However, there were examples in literature using over 100 statements in CM based on the complexity of the studied phenomenon (Kemer, Borders, & Willse, 2014; Kemer, Pope, & Neuer Colburn, 2017).

Considering the comprehensive nature of the studied phenomena while being aware of the excessive number of statements obtained in the current study (n = 262), the researcher decided to randomly split the statements into two. However, to represent participants' experiences in the statement pool, in consultation with her dissertation chair, the researcher split 247 literature-based statements into half while keeping all 15 items obtained from the focus group participants. With the intention of ensure conceptual inclusion, the random split process was repeated within each of the 11 factors' item list in a stratified manner. For example, RSE factor had a total of 95 items, so 48-items were included in the final statement list. While there were nine items in the research productivity factor list, five of those nine items were included in the final statement list. At the end of this process, 124 of the 247 literature-based items kept along with the 15 items generated by the focus group participants, resulting a total of 139 statements in the final list to be used in the structuring statements step.

Step 3: Structuring the Statements

The researcher obtained the main data for the concept mapping analyses in the structuring of statements step. In this step, the researcher sent packages to the participants with sorting and rating directions for the final set of statements. Sorting data provided the researcher with the information on conceptually meaningful groups of all statements based on participants' experiences and perspectives. Rating data offered the researcher with information on each statement's importance on participants' current RSE.

Out of 40, 18 indicated interest in participating to the structuring of statements step and were mailed data collection packets. Sixteen returned their packets resulting with an 89% response rate for this step. Out of 16 participants, 12 were females (75.0%) and four were males (25.0%) with an average age of 32.5 (SD = 9.38; range = 23-59). Two participants were Black or

African American(14.3%), ten were White or Caucasian (62.5%), one was Asian (6.3%), one was Middle Eastern (6.3%), one was White or Caucasian and Black or African American (6.3%), one was White or Caucasian and Hispanic (6.3%), and one participant did not specify a race category and reported as "other" (6.3%). All demographic information for the structuring the statements step is included in Table 2 (see Appendix H).

Step 4: Concept Mapping Analyses

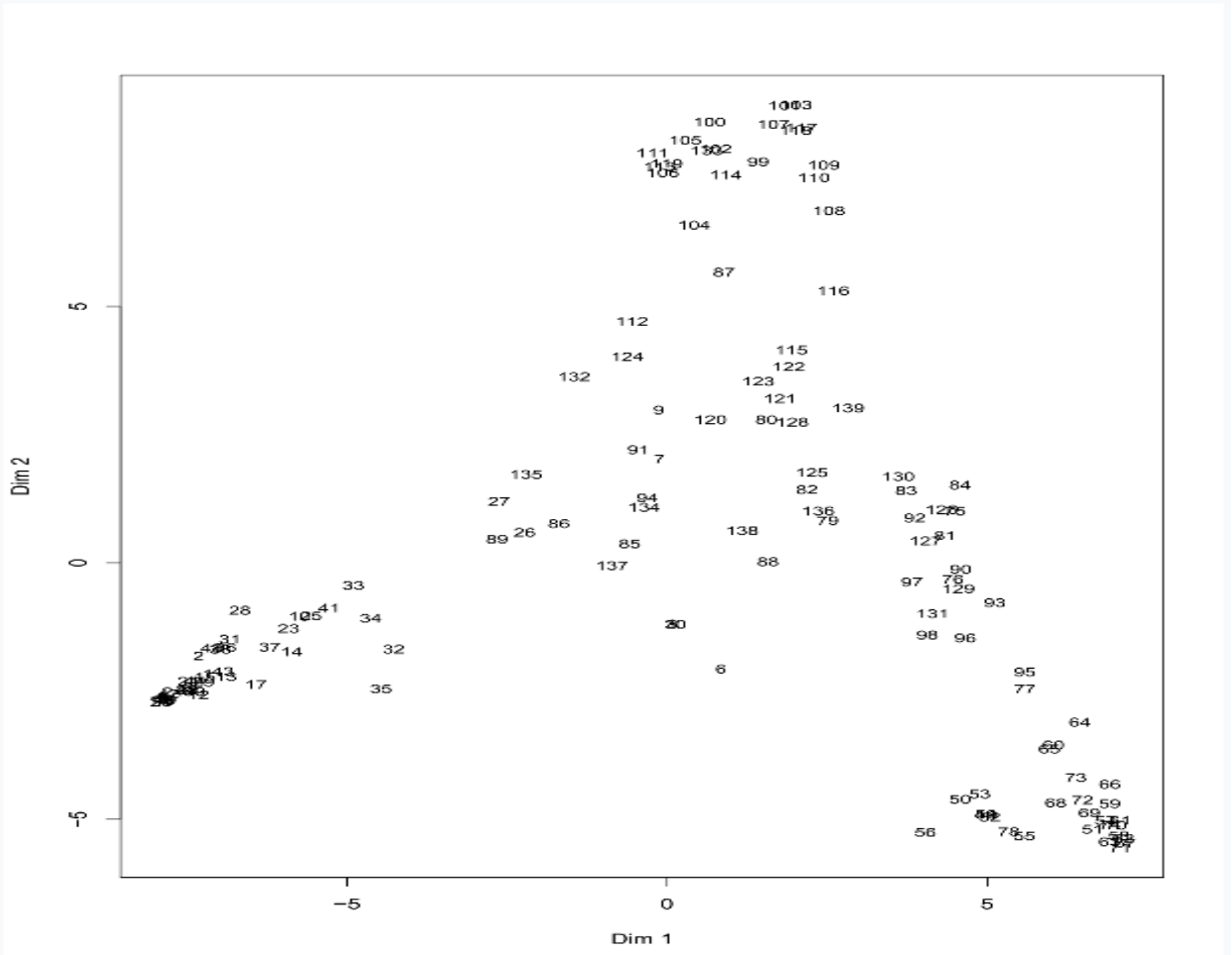
Sorting Data Results. After receiving the packages, the researcher entered sorting data in an excel sheet where columns represented the participants and rows represented the statements. Each participant created a different number of conceptual groups of the statements. Each participant's groups numbered, and each statement received the number of the group they were sorted into. For example, P1 sorted all the statements into 13 groups, so the maximum number for P1 was 13, while P11 had only four groups and the maximum number for P11 was 4.

Using this data set, the researcher created a group similarity matrix (GSM), an aggregate of the sorting data, through R editor (R Studio Team, 2015). Next, the researcher entered the GSM as the input for two-dimensional multidimensional scaling (MDS) analysis and obtained a point map in R editor (see Figure 1). To examine the fit of the two-dimensional MDS solution, the researcher checked the stress value in the R output. Kane and Trochim (2007) indicated that approximately 95% of the concept mapping studies yield an average of 0.285 stress value with a range of 0.205 to 0.365. The stress value for the current study was 0.283, indicating a good fit. The point map utilizes a two-dimensional scatterplot to demonstrate distribution of statements based on their conceptual similarities to each other based on aggregated participant data. In the point map, the statements that repeatedly grouped into the same piles get located closer. For example, statement 20 and 11 on the left lower corned of the point map are located on top of

each other indicating these two were sorted into the same groups very frequently. On the other hand, statement 6 and statement 103 located in the lower and upper areas of the map are very far from each other indicating that participants did not found these two statements not conceptually similar and no one or very few people grouped them together.

Figure 1

Point Map

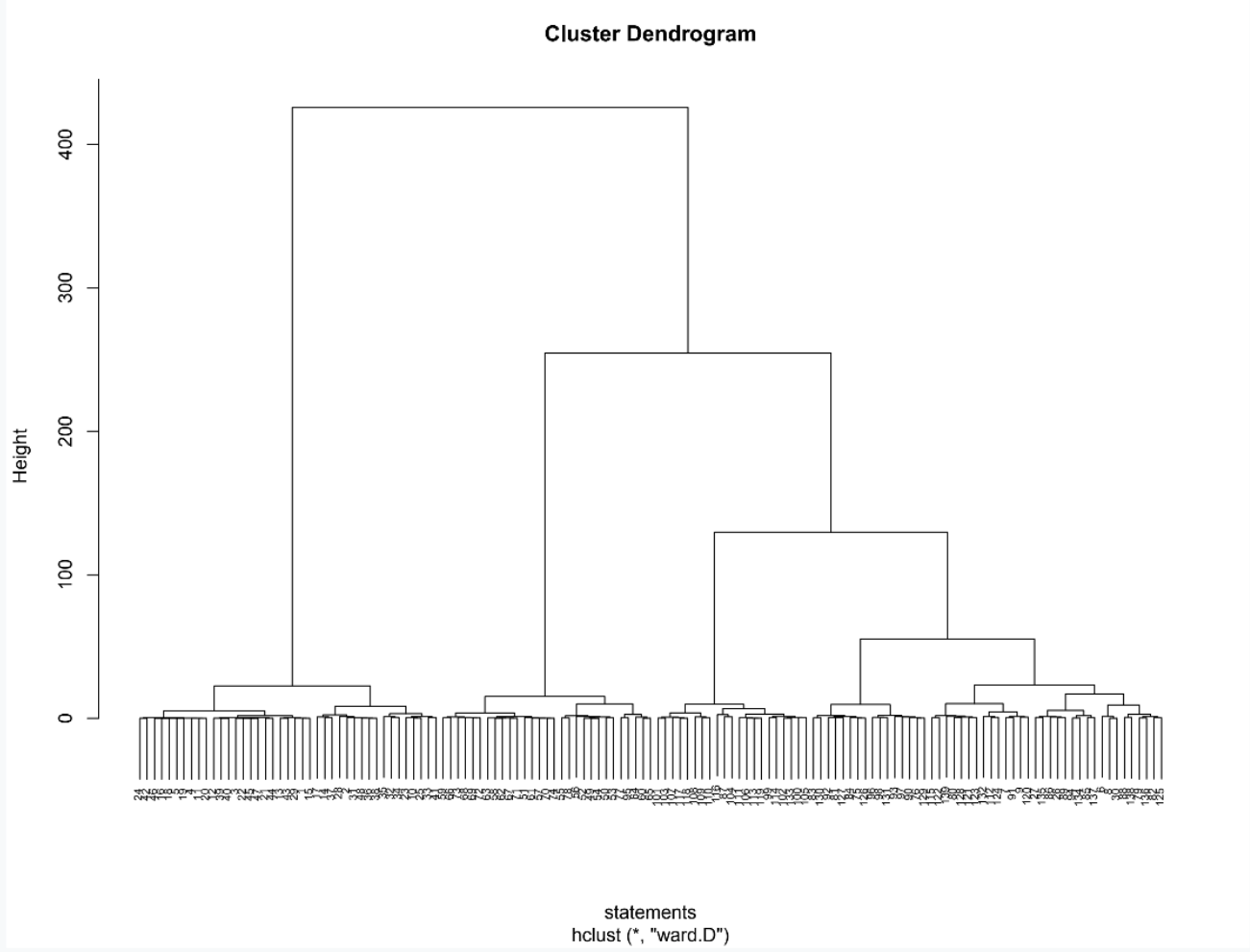


Next, using the R editor (R Studio Team, 2015), the researcher used the coordinate values of the two-dimensional solution obtained from MDS to run a hierarchical cluster analysis yielding a cluster tree (see Figure 2). The participants' sorting of the statements into similar piles

determines the statement similarities. The cluster tree uses the statement similarities and shows the statements in clusters. Starting from smallest dyads/triads (clusters) of the statements, the cluster tree shows the links across the statements until the hierarchically highest cluster is achieved at the top.

Figure 2

Cluster Tree



Utilizing the statement branches from the cluster tree along with the point map, the researcher and the dissertation chair identified 17 preliminary clusters. Next, the researcher sent these 17 preliminary clusters with their statements to an external auditor, asking the auditor to

look over the document and offer feedback on the conceptual consistency across cluster labels and the assigned statements. The auditor was a full professor in a counselor education program with extensive background in teaching research methodology to counselor education doctoral students and a scholarly interest and publication record on research self-efficacy. Auditor made eight specific comments about statements. The researcher and the dissertation chair reviewed the suggestions and made three revisions based on these suggestions and completed the preliminary cluster list to be discussed in the last step of data collection, interpretation of maps focus group.

Rating Data Results. Participants rated each statement based on the statements importance to their current research self-efficacy and returned their data to the researcher with the sorting data. Rating data analysis completed after interpretation of maps step, because the researcher used the rating data to see the importance of each cluster to participants current RSE. Please see Step 5 for detailed discussion of the rating data results.

Step 5: Interpreting the Maps

For the interpretation of maps step, the researcher reached out to all 40 participants and only five participants attended to the online focus group resulting with a 12.5% response rate. In this step, all five participants were females (100%). Participants' age range was from 26 to 38 with an average age of 32.4 (*SD* = 4.77; range = 26-38). One participant was Black or African American (20%), three were White or Caucasian (60%), and one participant did not specify a race category and reported as "other" (20%). All demographic information for interpretation of maps step is included in Table 3 (see Appendix H).

To familiarize participants to the data, the researcher shared the preliminary clusters with the participants prior to the focus group session. At the beginning of the online focus group, the researcher presented the focus group agenda, summarized the first two steps of data collection,

and introduced the point map. The preliminary cluster list with 17 clusters along with the point map (see Figure 1) were the main discussion materials of the focus group. Starting from the cluster one, focus group participants reviewed each cluster and collaboratively finalized the cluster names and statements based on the conceptual meaningfulness. After detailed discussions, focus group participants decided to move three statements into different clusters than the preliminary findings, made changes to the three cluster names, and finalized the cluster list of 17. Table 4 reports the final cluster list.

Table 4

Final Cluster List

Cluster Number	Cluster Name
Cluster 1	Conceptualization of Research (Skills)
Cluster 2	Application of Research (Skills)
Cluster 3	Management/ Administrative/ Logistical Aspects of Research (Skills)
Cluster 4	Individual's Intentionality in Developing Research Competence
Cluster 5	Research Activity and Outcome
Cluster 6	Interest and Motivation for Conducting (Own) Research
Cluster 7	Interest and Motivation for Research Leadership and Collaboration
Cluster 8	Research Culture and Collaboration Among Peers
Cluster 9	Program's Intentionality in Developing Research Competence
Cluster 10	Program's Research Culture
Cluster 11	Faculty Perspectives, Activity, and Support on Research
Cluster 12	Connection with and Separation from the Mentor
Cluster 13	Mentor's Active Encouragement and Support
Cluster 14	Mentor's Perspectives About Mentee's Research Knowledge and Skillset
Cluster 15	Mentor's Research Knowledge and Skillset
Cluster 16*	External Social Support
Cluster 17*	Developmental Level

*By Itself Cluster

Utilizing the rating data, the researcher obtained the mean scores for each cluster to describe the importance level of clusters for the participants' current RSE on a scale of 0 (Not

important at all) to 10 (Very important). The researcher also calculated the mean scores for each of the clusters based on the participants' year in the program to see if the cluster importance changed for different years. The mean and standard deviation of each cluster for all participants (general), and for the year in the program (1st year, 2nd year, 3rd year, and 3+ years) are presented in Table 5. For all participants' cluster mean scores ranged from 5.59 (*SD* = 2.45) to 8.69 (*SD* = 1.23), while cluster mean scores for first-year doctoral students ranged from 0 to 10 (*n* =1; *SD* could not be calculated), for second-year doctoral students ranged from 4.81 (*SD* = 1.72) to 8.51 (*SD* = 1.67), for third-year doctoral students ranged from 5.54 (*SD* = 2.08) to 9.33 (*SD* = 0.66), and for doctoral students who have been in the program over three years ranged from 5.25 (*SD* = 1,41) to 10.

The cluster importance rates appeared change for different clusters based on participants' year in the program. Top three highest rated clusters for the first-year doctoral student were "developmental level," "conceptualization of research (skills)," and "application of research (skills);" while the lowest rated clusters among first-years were "connection with and separation from the mentor," "mentor's perspectives about mentee's research knowledge and skillset," and "mentor's research knowledge and skillset." Second-year doctoral students rated clusters "mentor's active encouragement and support," "mentor's perspectives about mentee's research knowledge and skillset," and "application of research (skills)" as highest importance, while lowest ratings were assigned to "management/ administrative/ logistical aspects of research (skills)," "research activity and outcome," and "developmental level" clusters. Third-year students' highest ratings were for the clusters "application of research (skills)," "conceptualization of research (skills)," and "external social support," while lowest ratings were for the "research activity and outcome," "management/ administrative/ logistical aspects of

Table 5

Cluster Ratings According to Year in the Program

Cluster	General			1st year			2nd year			3rd year			3+ years		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
1.Conceptualization of Research (Skills)	16	**8.6**	1.13	1	**9.5**	1.18	7	7.8	1.15	6	**9.2**	0.67	2	8.6	1.79
2.Application of Research (Skills)	16	**8.7**	1.23	1	**8.6**	2.85	7	**8.2**	1.52	6	**9.3**	0.66	2	8.4	1.60
3.Management/Administrative/Logistical Aspects of Research (Skills)	16	5.8	2.12	1	5.2	4.64	7	4.8	1.72	6	6.1	2.42	2	8.3	0.33
4.Individual's Intentionality in Developing Research Competence	16	7.2	1.87	1	7.0	4.69	7	7.6	1.38	6	6.5	2.27	2	7.8	3.18
5.Research Activity and Outcome	16	5.6	2.45	1	7.0	4.69	7	5.5	3.27	6	5.5	2.08	2	5.3	1.41
6.Interest and Motivation for Conducting (Own) Research	16	6.3	2.24	1	8.4	2.87	7	6.0	2.82	6	6.2	1.90	2	6.3	2.12
7.Interest and Motivation for Research Leadership and Collaboration	16	6.5	1.81	1	5.8	3.76	7	6.4	2.09	6	6.7	2.07	2	6.8	0.94
8.Research Culture and Collaboration Among Peers	16	7.1	1.45	1	7.1	3.67	7	7.0	1.60	6	7.1	1.77	2	7.6	0.10
9.Program's Intentionality in Developing Research Competence	16	7.6	1.14	1	7.0	4.83	7	7.7	1.23	6	8.2	0.63	2	8.0	0.42
10.Program's Research Culture	16	7.4	1.06	1	5.8	4.86	7	7.3	1.29	6	7.8	0.80	2	7.3	0.45
11.Faculty Perspectives, Activity, and Support on Research	16	7.5	1.58	1	6.0	5.48	7	7.9	1.62	6	7.1	1.65	2	7.9	1.84
12.Connection with and Separation from the Mentor	16	6.6	2.44	1	0.0	0.00	7	7.2	1.40	6	6.4	2.05	2	8.7	1.41
13.Mentor's Active Encouragement and Support	16	**8.0**	1.91	1	2.5	4.63	7	**8.3**	0.76	6	8.1	1.63	2	**9.9**	0.18
14.Mentor's Perspectives About Mentee's Research Knowledge and Skillset	16	7.9	2.59	1	0.0	0.00	7	**8.5**	1.67	6	8.1	1.69	2	**9.1**	1.27
15.Mentor's Research Knowledge and Skillset	16	7.4	2.47	1	0.0	0.00	7	8.1	1.30	6	7.6	2.01	2	8.3	1.21
16.External Social Support*	16	7.9		1	5.0		7	7.3		6	**8.5**		2	**10.0**	
17.Developmental Level*	16	6.9		1	**10.0**		7	5.9		6	7.8		2	6.5	

Note: Highest rated clusters are bolded.

*By itself cluster.

research (skills)," and "interest and motivation for conducting (own) research" clusters. Lastly, doctoral students who have been in the program over three years rated the clusters "external social support," "mentor's active encouragement and support," and "mentor's perspectives about mentee's research knowledge and skillset" as highest importance, while the clusters "research activity and outcome," "interest and motivation for conducting (own) research," and "developmental level" received the lowest importance ratings for the participants' current RSE.

Regions are defined as clusters-of clusters generated based on the collective meaningfulness of differing number of clusters (Kane & Trochim, 2007). Based on the discussions in the focus group, utilizing the maps the researcher structured the 17 clusters into six regions involving different number of clusters: 'Individual,' 'Mentor,' 'Faculty,' 'Peers,' 'Doctoral Program,' and 'Support outside the program.' Next, the researcher addressed the research questions based on the results obtained from the three steps of data collection.

Research Question

What are the factors of counselor education doctoral students' RSE in CACREP-Accredited doctoral programs?

As a result of concept mapping procedures, counselor education doctoral students concluded 17 clusters, two of which were by-itself clusters, describing the factors influencing their RSE. All these clusters structured into six regions based on their conceptual meaningfulness: 'Individual,' 'Mentor,' 'Faculty,' 'Peers,' 'Doctoral Program,' and 'Support outside the program.' The researcher below presents descriptions for each region and clusters within them. Please see Appendix I for the final cluster list with the assigned statements.

Individual. 'Individual' region included the clusters of conceptualization of research (Skills), application of research (skills), management/administrative/logistical aspects of research (skills), individual's intentionality in developing research competence, research activity and outcome, interest and motivation for conducting (own) research, interest and motivation for research leadership and collaboration, and developmental level.

Cluster 1. Conceptualization of research (skills) included statements on cognitive skills doctoral students perform during the process of forming research ideas. Sample items from the cluster were "4. Placing my study in the context of existing research and justify how it contributes to important questions in the area," "16. Choosing an appropriate research design that will answer a set of research questions and/or test a set of hypotheses," and "18. Determining the universe, population, and appropriate sample for a given study."

Cluster 2. Application of research (skills) represented statements on skills doctoral students utilize during different stages of conducting research, such as designing the research, collecting and analyzing data, and writing the findings. Sample items from the cluster were "17. Designing a study using quantitative methods (e.g., experimental, quasi-experimental designs, clinical trials)," "36. Integrating the research findings into the existing literature by discussing what is known, unknown, and what requires further study," and "45. Using statistical packages (e.g., SPSS-X, SAS)."

Cluster 3. Management/administrative/logistical aspects of research (skills) involved statements on skills doctoral students' management of administrative tasks of a research project. Sample items from this cluster were "25. Recruiting and screening research project staff," "26. Training assistants to collect data," and "28. Maintaining a log of my research process (e.g., experiments conducted, major decisions, analyses performed)."

Cluster 4. Individual's intentionality in developing research competence presented statements on doctoral students' planning and purposefulness in developing their own research competence. Sample items from this cluster were: "134. Taking research and statistics classes before doctoral program," "131. Mentorship prior to my doctoral studies," and "132. Attending research or statistics workshops."

Cluster 5. Research activity and outcome included statements regarding outcomes of research activities doctoral students may experience. Sample items from the cluster were "123. Quantity of manuscripts I am currently in the process of preparing to submit for publication (i.e., writing the manuscript)," "124. Quantity of projects I am currently conducting statistical analyses on data," and "120. Number of articles I have submitted to refereed journals."

Cluster 6. Interest and motivation for conducting (own) research included statements regarding doctoral students' interest and motivation on developing a research agenda that they can conduct independently. Sample items from the cluster were "117. My desire to leave my mark on my field," "133. My desire to work as a faculty at a high research institution," and "103. Being passionate about writing for publication/presentation."

Cluster 7. Interest and motivation for research leadership and collaboration represented statements regarding doctoral students' interest and motivation on collaborating in research projects with others, leading research teams, or serving in research leadership activities. Sample items from the cluster were "9. Working interdependently in a research group," "108. Being eager to supervise student's research projects," and "110. Being passionate about serving as an editor for a scientific journal."

Cluster 17. Developmental level was a by-itself cluster, standing for only one statement on the influence of their year in the program on their RSE: "138. My year in the doctoral program."

Peers. 'Peers' region included only the *research culture and collaboration among peers* cluster.

Cluster 8. Research culture and collaboration among peers involved statements regarding doctoral students' perception of the research culture among peers and cohort members. Sample items from the cluster were "126. My perception of my peers (e.g., support, research activity, personalities, cohort dynamics)," "115. Earning the respect of my peers when conducting research," and "125. Collaborating on research with other doctoral students within and across programs."

Mentor. 'Mentor' region included clusters of connection with and separation from the mentor, mentor's active encouragement and support, mentor's perspectives about mentee's research knowledge and skillset, and mentor's research knowledge and skillset.

Cluster 12. Connection with and separation from the mentor was represented by statements on doctoral students' feelings of connection or separation from their mentor's research and how comfortable they are in the mentoring relationship. Sample items from the cluster were "95. Feeling like I need to choose a research topic of interest to my mentor at the expense of my own interests," "64. Feeling uncomfortable working with my mentor," and "74. Having an intellectually stimulating relationship with my mentor."

Cluster 13. Mentor's active encouragement and support included statements about doctoral students' perceptions of their mentors' active encouragement, support, and involvement with them in the mentoring relationship. Sample items from the cluster were "65. Being

introduced to professional activities (e.g., conferences, submitting articles for journal publication) by my mentor," "61. My mentor's kindness when commenting about my work," and "63. My mentor taking my ideas seriously."

Cluster 14. Mentor's perspectives about mentee's research knowledge and skillset included statements about doctoral students' perceptions of their mentor's perspective about their research knowledge and skillset. Sample items from the cluster were "56. My mentor's perspectives on my skills to write the introduction and literature review for a research study," "57. My mentor's views on my competence to defend a research study," and "58. My mentor's views on my ability to keep records during a research project."

Cluster 15. Mentor's research knowledge and skillset involved statements on doctoral students' perceptions of their mentors' research knowledge and skillset. Sample items from the cluster were "78. My mentor's understanding and acceptance of any piece of research will have its methodological problems," "52. My mentor's ability to use statistical packages (e.g., SPSS–X, SAS)," and "49. My mentor's ability to write the introduction and discussion sections for a research paper for publication."

Faculty. 'Faculty' region only included the *faculty perspectives, activity, and support on research* clusters.

Cluster 11. Faculty perspectives, activity, and support on research involved statements regarding doctoral students' perception of the program faculty's research perspectives, involvement, and demonstration of research activity and training. Sample items from the cluster were "81. Having faculty producing clinically relevant research," "96. Feeling like my research ideas are squashed during the process of collaborating with faculty members, so that the finished

project no longer resembles my original idea," and "98. Having faculty showing excitement about research and scholarly activities."

Doctoral Program. The 'Doctoral Program' region could be considered to subsume all the other regions that has been described so far in the current study (e.g., faculty, mentor, peers). However, the 'Doctoral Program' region particularly focused on program-specific factors and included program's research culture and program's intentionality in developing research competence clusters.

Cluster 9. Program's intentionality in developing research competence was represented through statements about doctoral students' perceptions of their doctoral program's intentionality in creating procedures to train future researchers. Sample items from the cluster were "94. During our coursework, receiving training on a wide range of research methodologies (e.g., field, laboratory, survey approaches)," "137. The sequencing of the research design classes in my plan of study," and "75. Being acknowledged by my program for scholarly achievements."

Cluster 10. Program's research culture included statements regarding doctoral students' perception of the research behaviors, values, expectations, attitudes, and norms in their doctoral program. Sample items from the cluster were "92. Having a training environment promoting the idea that although parts of research must be done alone, other parts may involve working closely with others," "79. Being encouraged to get involved in some aspects of research early in my graduate training," and "82. Being in a program in which many different research styles (e.g., field, laboratory) are acceptable."

Support Outside of the Program. 'Support outside the program' region only included external social support cluster.

Cluster 16. External social support was a by-itself cluster, including only one statement on the support doctoral students receive from sources outside of their doctoral program: "127.Having a support system outside of program (e.g., family, friends)."

Summary

In this chapter, the researcher presented the results of the concept mapping procedures and addressed the research question. In the following chapter, the researcher discusses study findings in the context of existing RSE literature.

CHAPTER V

DISCUSSION

This chapter includes discussion of the six regions represented 17 factors (clusters) conceptualizing doctoral counselor education students' RSE from a theoretical framework. The researcher also discusses the limitations of the current study as well as the implications for researcher training in counselor education stakeholders and future research.

RSE Structure From A Theoretical Perspective

RSE is a complex concept including relational and contextual elements. Utilizing Bandura's Social Cognitive Theory (SCT; 1986), Lent and Lopez's (2002) Tripartite Model of Relational Efficacy Beliefs, and McLeroy et al.'s (1988) Ecological Model the purpose of the current study was to conceptualize counselor education doctoral students' RSE from a holistic perspective, using intrapersonal, interpersonal, and systemic factors framework.

In the current study, as a result of concept mapping procedures, counselor education doctoral students conceptualized their RSE with 17 clusters describing the factors influencing their RSE: (1) *Conceptualization of research (skills)*, (2) *Application of research (skills)*, (3) *Management/administrative/logistical aspects of research (skills)*, (4) *Individual's intentionality in developing research competence*, (5) *Research activity and outcome*, (6) *Interest and motivation for conducting (own) research*, (7) *Interest and motivation for research leadership and collaboration*, (8) *Research culture and collaboration among peers*, (9) *Program's intentionality in developing research competence*, (10) *Program's research culture*, (11) *Faculty perspectives, activity, and support on research*, (12) *Connection with and separation from the mentor*, (13) *Mentor's active encouragement and support*, (14) *Mentor's perspectives about mentee's research knowledge and skillset*, (15) *Mentor's research knowledge and skillset*, (16)

External social support (by itself cluster 1), and (17) *Developmental level (by itself cluster 2)*. As represented in the visual representation, based on their conceptual relation to one another these clusters structured into regions (clusters-of-clusters).

Intrapersonal

Based on Bandura's (1986) definition of self-efficacy and the RSE literature, individual sits in the center of conceptualizing RSE (e.g., Jones, 2012; Lambie et al., 2014; Miller, 2006). Similar to previous research (e.g., Bieschke et al., 1996; Deemer et al., 2010; Jones, 2012; Lambie et al., 2014), in the current study, intrapersonal level of Ecological Model was represented through the 'Individual' region. There were eight clusters focusing on the doctoral students' self as a factor influencing their RSE. Specifically these clusters were *conceptualization of research (skills)*, *application of research (skills)*, *management/administrative/logistical aspects of research (skills)*, *individual's intentionality in developing research competence*, *research activity and outcome*, *interest and motivation for conducting (own) research*, *interest and motivation for research leadership and collaboration*, and *developmental level*.

Participants generated three clusters focusing on the research skills of the individual doctoral student as factors influencing their RSE. These clusters appeared to represent cognitive skills doctoral students perform during the process of forming research ideas (i.e., *conceptualization of research* cluster), performance skills conducting different stages of research (e.g., designing the research, collecting and analyzing data, and writing the findings; *application of research* cluster), and management and administrative skills to conduct specific tasks of a research project (i.e., *management/administrative/logistical aspects of research* cluster). These three clusters aligned with the traditional definition of RSE concept that is structured upon

Bandura's theory (1986). Thus, the instruments in the literature uses similar research skills to the ones defined with in these three clusters to measure RSE (e.g., Mullikin, Balken, & Betz, 2007; Phillips & Russel, 1994). Utilizing the traditional definition of RSE and the RSE instruments, however, previous studies appeared to minimize RSE to solely individual's beliefs on their research skills (e.g., Bieschke, 2006; Jones, 2012; Kahn & Scott, 1997; Petko, 2012). The current study findings suggested that while being particularly important to understand each individual student's RSE, research skills may not be the sole measure for RSE. In other words, trying to understand RSE by utilizing only three out of 17 clusters limits our understanding. In addition to the three clusters of research skills, 14 other factors yielded in this study. These findings suggested that, separating from the traditional RSE definition, RSE concept is fed by 14 other factors that are beyond research skills. Therefore, rather than solely focusing on individual's research skills – it is important to understand the other contextual factors and attend to multiple layers (e.g., interest and motivation, interaction with peers), acknowledging all 17 factors of doctoral students' RSE.

Individual's intentionality in developing research competence cluster focused on students' actions (e.g., "132. Attending research or statistics workshops," "135. Succeeding in research courses") to structure their experience and growth purposefully to improve RSE. Specific focus on the participation and success in research training supported earlier studies' findings as the number of research credit hours increased, an individual's RSE also increased (e.g., Dumbauld et al., 2014; Jones's, 2012; Lambie et al., 2014). Furthermore, with the focus on doctoral students' self and their intentionality, this cluster also suggested that doctoral students considered themselves as active agents in their own research training through being purposeful in their studies to improve their research competence.

Another cluster under the individual region was *research activity and outcome,* which represented doctoral students' research involvement along with the outcomes influencing their RSE. This cluster specifically aligns with one of four sources of efficacy defined by Bandura (1994); the mastery experience. Mastery experience includes an individual's involvement and successes as a feeding source for their RSE. Suggesting that research activity and experience are factors influencing RSE the research activity and outcome cluster contradicts with Love et al.'s (2007) findings of no difference in the RSE levels of students with less or more research experience, while supporting Büyükoztürk et al.'s (2011) findings on previous research experience leading to higher RSE among students. Furthermore, highlighting the quantity of research production (e.g., number of published and unpublished manuscripts), professionally ideal outcomes of research process also appeared as important as the hands-on experiences for the counselor education doctoral students' RSE. This finding was also supportive of the previously obtained significant positive relationships between students' RSE and the number of attended conferences, journal subscriptions, papers written, and publications (Lambie et al., 2014; Lambie & Vaccaro, 2011; Odaci, 2013).

The significant impact of research interest on RSE has been discussed in Love et al.'s (2007) study with psychology graduate students and Lambie and Vaccaro's (2011) study with counselor education doctoral students. In the current study, *interest and motivation for conducting (own) research*, and *interest and motivation for research leadership and collaboration* clusters in the 'Individual' region also emphasized that desire and passion to develop a research agenda as well as to conduct research independently and collaboratively were influential factors of doctoral students' RSE. Complementing the findings from survey method in previous studies (Lambie & Vaccaro, 2011; Love et al., 2007), in the current study, this finding

was uniquely based on participants' presented/reported perspectives obtained through the mixed method approach.

Another noteworthy intrapersonal factor finding in relation to RSE from this study was *developmental level* specified as year in the program. Lambie and Vaccaro (2011; with counselor education) and Kahn and Scott (1997; with counseling psychology) reported that doctoral students' RSE increased as they progressed through their doctoral programs. Current finding with the specific cluster name, *developmental level*, appeared to suggest that the progress in the program is perceived as developmental progress in counselor education doctoral students' researcher identity and skill development. In the current study, the researcher also used the rating data to see if participants in different years of their program reported different clusters as more important to their current RSE.

Highest and lowest rated clusters per year in the doctoral program. Cluster comparison results revealed that participants from different years in their doctoral program rated different clusters as most and least important to their current RSE. Top three highest rated clusters for the first-year doctoral students were *developmental level*, *conceptualization of research (skills)*, and *application of research (skills)*, respectively. This finding was supportive of earlier research findings on significant positive relationships between the year in the program and the RSE (Lambie & Vaccaro, 2011; Morrison & Lent, 2014). First-year doctoral students reported being at the beginning of their doctoral training as well as cognitive and performance skills with research as the most important factors influencing their current RSE. On the other hand, the lowest rated clusters for the first-year doctoral students were *connection with and separation from the mentor*, *mentor's perspectives about mentee's research knowledge and skillset*, and *mentor's research knowledge and skillset*. For the first-year doctoral students,

therefore, the most important clusters were all from the individual region and the least important clusters were all from the mentor region. In other words, first-year doctoral students' focus was on themselves and their lack of research skills and/or experiences rather than possible outside factors, such as the mentor's involvement. Thus, when working with first year doctoral students, it may be necessary to structure the training procedures as well as processes in a way to allow exploration and understanding of self may be important.

Second-year doctoral students, on the other hand, rated *mentor's active encouragement and support*, *mentor's perspectives about mentee's research knowledge and skillset*, and *application of research (skills)* clusters as the most important clusters to their current RSE, while lowest rated clusters were *management/administrative/logistical aspects of research (skills)*, *research activity and outcome*, and *developmental level* clusters. Compared to the first-years, for the second-year doctoral students, highest and lowest rated clusters were from both individual and mentor regions. Second-year doctoral students considered mentor's influence (i.e., being available, taking student ideas seriously, being kind when commenting student work, making program requirements rewarding, inviting students to collaborate, encouraging student success, introducing them to professional activities, and facilitating professional development through networking) and having the skills to conduct research (e.g., formulating research hypotheses, selecting appropriate method for the study, collecting data, writing and presenting results) as more important for their current RSE when compared to the administrative research skills, current research activity and outcome, or the year in the doctoral program. Thus, mentors appeared to play a key role in second-year doctoral students' RSE, while having a safe and nurturing mentorship was very important in this process for the second-years.

Third-year doctoral students' highest rated clusters were *application of research (skills)*, *conceptualization of research (skills)*, and *external social support*, while lowest rated clusters were *research activity and outcome*, *management/administrative/logistical aspects of research (skills)*, and *interest and motivation for conducting (own) research*. Like the first-year students, third-year doctoral students also seem focus on their skills rather than program related aspects, such as mentor, faculty, or program influence, while also emphasizing the importance of support outside of their doctoral program. Considering third year is the time for most counselor education doctoral students start working on their dissertation, it seems logical that the focus on research skills reappears as the main informant of RSE. Thus, it seems to be critical to work with doctoral students during their third year with a special focus on their research skills; for instance, helping them explore their research interests to identify a dissertation topic as well as to obtain an understanding of research skills they need to complete their dissertation.

Lastly, doctoral students who have been in the doctoral program over three years rated *external social support*, *mentor's active encouragement and support*, and *mentor's perspectives about mentee's research knowledge and skillset* as highest importance clusters to their current RSE; whereas *research activity and outcome*, *interest and motivation for conducting (own) research*, and *developmental level* clusters received the lowest importance ratings for their current RSE. All the highest rated clusters for this group was about the factors outside of themselves (i.e., support outside of the program and mentor), while the individual factors such as interest, motivation, research activity, productivity and developmental level were the lowest rated factors.

Looking at the similarities and differences across different years in the program collectively, current study findings overlap with the earlier studies' findings about the year in the

program being an influential factor on RSE (Lambie et al., 2014; Lambie & Vaccaro, 2011). These studies concluded that doctoral students' RSE increased as they went through the doctoral program and third year doctoral students had higher RSE scores compared to the first- and second-year doctoral students. Yet, these studies did not explore how this change happens and what might be the specific factors influencing doctoral students' RSE. Offering a further understanding of the different needs of doctoral students as they go through the doctoral program, current findings suggested that the change of RSE informants for different years seem to be parallel with the professional development of doctoral students and the requirements of different years in a doctoral program.

When students first start the doctoral program, worries about knowing enough or fitting in seem to keep their focus on themselves, particularly on their skills and developmental level. As they get more comfortable in the program and understand themselves through the first year, the informants of RSE seem to be shifting to interactions and relationships with mentors. Mentors' role appear to be critical throughout the training, especially in the second year, as the mentoring relationship help them to explore new realities and grow professionally through activities like collaborations, presentations, and networking. In counselor education doctoral programs, starting at the third year, doctoral students to start working on their dissertation study. Dissertation research is a critical corner stone for a doctoral student's RSE, because dissertation, most probably, is the first time where the doctoral student becomes a producer of research from a consumer, this time as the lead researcher. Dissertation is the time where doctoral students are expected to plant a seed that hopefully will grow and direct their research agenda, which they might follow for the rest of their career. Thus, it was not surprising that the doctoral students' RSE informants were back to themselves and their research skills among the third-year students.

Lastly, findings from the students beyond the third year could be interpreted with their developmental place, because in most cases after third year the importance of support from faculty and mentors and support outside of the program becomes obvious. Perhaps holding a better sense of their strengths and limitations based on their research activity in the doctoral program, doctoral students beyond the third year may be critically aware of social aspects of research process. To sum up, the findings in this section suggested that it is critical for the doctoral program, faculty, and mentors to understand and pay attention to the developmental informants of doctoral students' RSE while working with them through all interactions (i.e., interactions in and out of classes and research projects, and planning of available and required courses).

As part of intrapersonal factors, previous studies also explored other demographic information factors in relation to RSE, such as gender (Bakken et al., 2010; Bieschke et al., 1996; Dumbauld et al., 2014; Jones, 2012; Kahn & Scott, 1997; Landino & Owen, 1988; Vasil, 1992), race/ethnicity (Bakken et al., 2010; Lambie & Vaccaro, 2011; Petko, 2012), age (Bieschke et al., 1996; Jones, 2012; Lambie, 2014; Petko, 2012), and career aspirations (Kahn & Scott, 1997; Petko, 2012). Minority groups studied in the earlier studies (e.g., females, people of color) composed a significant portion of the current study participants, while none of these factors appeared in the current study results. This finding may indicate that doctoral students involved int his study do not perceive these characteristics as influential, aligning with the equivocal findings related to demographic information and RSE relationship.

Interpersonal

Interpersonal factors in Ecological Model involve factors sourced from an individual's relationship with an individual or a group (McLeroy et al., 1988). Current study findings

provided three regions that were related to doctoral students' relationships with other parties: 'Mentor,' 'Faculty,' and 'Peers.' Addressing three specifically-influential groups in the interpersonal level, all regions within interpersonal factors pointed out two out of four resources of self-efficacy; vicarious experience and social persuasion (Bandura, 1994). Experiences of observing others in the process and receiving positive feedback regarding one's abilities on research skills from their mentor, faculty, and peers have been identified as influential to doctoral students' RSE development.

A mentor can be defined as a more experienced professional who serves as a role model, resource, coach, and sponsor provides knowledge, advice, challenge and support, direction, and feedback to the less experienced professional regarding professional competence and identity as well as career plans and interpersonal development (Noe, 1988; O'Neil and Wrightsman, 2001). Underlining the important role mentors hold in doctoral students' research training, in the current study, mentor region was the second most crowded region represented in four clusters: *connection with and separation from the mentor*, *mentor's active encouragement and support*, *mentor's perspectives about mentee's research knowledge and skillset*, and *mentor's research knowledge and skillset*.

Focusing on the relationship aspect of mentorship, findings from the *connection with and separation from the mentor* and *mentor's active encouragement and support* aligned with Morrison and Lent's (2014) and Hollingsworth's (2002) findings on the significant positive relationship between advisory working alliance and RSE. In the *connection with and separation from the mentor* cluster, having intellectually stimulating meetings and feeling comfortable learning from the mentor through vicarious experiences were noteworthy components of doctoral students' RSE. Findings on the mentors' communication of reasonable expectations and support

as well as actions to foster student research interest (even different than their own) were supportive of Morrison and Lent's (2014) reports on increased likelihood of confidence in RSE for doctoral students when favorable advisory alliance was present. Specifically, mentor's availability, invitations to the student to collaborate in their research, and active involvement in introducing the student to professional activities, such as conferences or journal submissions, were a few examples of mentor's support contributing to doctoral students' RSE. Similarly, taking the doctoral student's ideas seriously and being kind when commenting on the student's work while encouraging for accomplishments appeared to reflect on RSE. Contradicting Kahn's (2001) findings on insignificant effect of the relationship with mentor on counseling psychology students' RSE, the current findings suggested that counselor education doctoral students reported the quality of relationship with the mentor as influential for their RSE.

RSE researchers mainly examined mentoring relationships' effect on students' RSE either by focusing on advisory working alliance or mentee characteristics; neglecting the exploration of mentor's role in this process (Hollingsworth & Fassinger, 2002; Kahn, 2001; Schlosser & Gelso, 2001). Findings of the current study not only offered operational definitions for mentoring relationship through *connection with and separation from the mentor* and *active encouragement and support* clusters, but also yielded two more factors focusing on the mentor: *mentor's research knowledge and skillset* and *mentor's perspectives about mentee's research knowledge and skillset*. *Mentor's research knowledge and skillset* cluster suggested that doctoral students considered their mentor's strong research skills in different tasks from formulating hypothesis, analyzing data, keeping records during a research project to writing the results up and being able to defend a research study as influential factors of their RSE. Furthermore, in *mentor's perspectives about mentee's research knowledge and skillset* cluster, doctoral students also

presented both verbal and non-verbal behaviors of their mentors as influential on their RSE. Obtaining four clusters particularly focusing on mentoring relationship, findings of the current study highlighted that, via a multifaceted perspective, examinations of RSE must involve both mentors' and mentees' characteristics as well as their interactions in the mentorship process.

Separating from the 'Mentor' region, 'Faculty' region provided findings addressing doctoral students' interactions and relationship with all the faculty members in their program regardless of faculty's involvement into doctoral training process through teaching, supervising, mentoring or advising. 'Faculty' region suggested that doctoral students pay attention to faculty members' research perception and activity as well as their support for the doctoral students' research as factors influencing their RSE. This region findings suggested that having faculty who are excited about research and scholarly activities who are producing clinically relevant research and interested in teaching research in relation to the counseling field were influential for doctoral students' RSE. Additionally, faculty-student interactions were also an important component of this region findings. Doctoral students appeared to value having an equal chance to work with all the faculty and feeling like their research ideas are valuable and respected by the faculty in informing their RSE. Aligning with Love et al.'s (2007) statement on positive research environment playing a key role in students' research experience, the findings from current study also pointed out the critical faculty's role on to the doctoral students' RSE as part of a research positive community.

'Peer' region in the current study suggested that doctoral students' peers generated a unique environment, where research behaviors, values, attitudes, norms, and activities among peers become influential on students' RSE. This finding was supportive of only one study in the literature that reported positive peer interactions contributed to individual's research experience

(Love et al., 2007). While peer influence on doctoral students' RSE has never been explored previously, current study findings suggested that peer influence warrants further exploration as an interpersonal level dimension.

Systemic

In the current study, a combination of institutional, community, and public policy levels from the Ecological Model (McLeroy et al., 1988) defined the systemic factors. It is essential to emphasize the fact that both intrapersonal and interpersonal factors cannot be considered outside of the systemic level. However, for practical reasons such as ensuring detailed understanding of each level, the researcher presented the systemic factors separate from the rest. In the current study findings, the 'Doctoral Program' and 'Support outside the program' regions appeared as systemic level factors.

Doctoral programs' influence on doctoral students' development is undeniable. Within each doctoral program, unique mixture of multiple components such as the organizational structure, faculty members, student body, mission, and vision of the program in combination with each doctoral students' unique characteristics, background and future goals generate different outcomes. Yet, there are certain approaches that can help a program to support doctoral students in their training process as future researchers. Mostly aligning with Gelso's (1993) Theory of Research Training Environment ingredients studied in relation to RSE in earlier studies (Kahn & Schlosser, 2010; Lambie & Vaccaro, 2011; Morrison & Lent, 2014; Phillips & Russell, 1994; Schlosser & Kahn, 2007), findings from the 'Doctoral program' region underlined critical points. 'Doctoral Program' region emphasized the *program's research culture* and *program's intentionality in developing research competence* as factors influencing doctoral students' RSE. The *program's research* culture cluster represented doctoral students'

perspectives on the research behaviors, values, expectations, attitudes, and norms in their doctoral program also reflecting the housing institution's research norms. Findings in this region emphasized the doctoral programs' influence through the research expectations, generating non-anxiety provoking research experiences before dissertation, and encouraging early research involvement on counselor education doctoral students' RSE. General attitude towards acceptance of different research styles (e.g., field, laboratory), emphasis on limited nature of all research, and research as a both social and independent experience were added factors influencing doctoral students' RSE. Thus, every component of the doctoral training environment seem to make an impact on doctoral students' RSE, while students' beliefs in their research skills as well as behaviors cannot be understood outside of this context.

Statements from the *program's intentionality in developing research competence* cluster pointed out the influence of program's purposefulness in, (a) structuring doctoral training through sequencing research and statistics courses, (b) integrating research into the graduate assistantship assignments, and (c) providing opportunities for doctoral students to be part of research teams. In this cluster, developmentally-appropriate wide range of quality research and statistics courses, applicable knowledge and skills obtained from these courses to the counseling field, and discussion about the relevance of this knowledge to the clinical work were all described as factors influencing doctoral students' RSE. In other words, doctoral programs' attention to the needs of their students personally and developmentally seems necessary to generate the ideal environment for effective research training. Lastly, *program's intentionality in developing research competence* cluster included the "75. Being acknowledged by my program for scholarly achievements." Highlighting the importance of acknowledgement and support in the doctoral program, this finding supported Morrison and Lent's (2014) report on the research

training environments' influence on students' RSE through the experiences of acceptance and approval in the program and mentoring relationships.

Despite contradicting Lambie and Vaccaro's (2011) findings with counselor education doctoral students, the current study findings on the importance of multiple doctoral program related factors were in line with previous findings on the significant relationship between RTE and RSE (Kahn, 2001; Kahn & Miller, 2000; Kahn & Schlosser,2010; Phillips & Russell, 1994). Furthermore, current study findings also yielded unique factors that have not been studied and/or reported in the RTE literature, such as research emphasis in the institution, program expectations to complete research, and sequencing of the research design classes in the students' plan of study. Doctoral students reported the influential nature of doctoral programs setting up reasonable research expectations and providing necessary support (i.e., research teams, assigning students to a mentor from the first semester based on their interest, ensuring that their assistantship assignments benefit student development as well as supporting faculty work) for students to achieve these requirements.

Lastly, another unique finding in this study was the 'Support Outside the Program' region. The *external social support* cluster under this region was a by-itself-cluster only including the "127. Having a support system outside of program (e.g., family, friends)" statement. Participants' decision keeping this one item as a cluster by itself indicated that having a support system outside of the doctoral program was critical for doctoral students' RSE. This finding was unique because, thus far, no studies in the RSE literature found the potential impact of support outside of the doctoral program on doctoral students' RSE. The reason for this factor being discussed for the first time may be related to the study sample. As a reflection of their professional role as counselors, counselor education doctoral students may be able to recognize

the outside factors beyond their doctoral program as influential to their RSE, while the study design may have allowed participants to generate factors based on their phenomenological experiences.

Limitations of the Study

The current study results yielded valuable information about the factors influencing counselor education doctoral students' RSE. As with all research, there are multiple limitations to this study findings, which must be considered within the context of these limitations.

First, through using the concept mapping approach, current study only focused on exploring and describing factors influencing counselor education doctoral students' RSE. Although concept mapping is considered superior to the mere qualitative or quantitative methods, due to its non-experimental nature, causality cannot be inferred. However, the clusters obtained in this study can be considered as being part of many factors influencing RSE.

Second, the demographics of the participants in this study, most of whom were white and female, limits the generalizability of the findings. A study with a more diverse group of doctoral students may yield different results. Furthermore, participants in the current study were recruited through convenience sampling. Experiences of doctoral students from different programs may vary. Therefore, generalization beyond the demographics of this sample should be made cautiously. Participants also have volunteered to take part in this study, so their interest to the topic should also be considered when reviewing study findings. Additionally, this study aimed to explore the RSE concept within the counselor education doctoral students from CACREP-accredited programs; thus, the conceptualization of RSE from this study should be considered carefully when used with doctoral students from other disciplines.

Another limitation of this study that affects generalizability of the findings was the retention of participants in each step of the data collection. Concept mapping allows flexibility to move forward with different participants as needed. In order to address this limitation, the researcher used incentives (VACES Dissertation Grant). However, involved participant numbers in different steps of concept mapping differed, limiting the generalizability of the findings. Moreover, the researcher utilized the rating data to examine differences among the students' in different years of their programs. However, the number of participants in different years was not equal and quite limited in some groups (i.e., there was only one first year student), which may have influenced the representative nature of the findings.

This study only looked at the students' beliefs at certain points in their respective academic studies. Students might have similar or different experiences and conceptualization if examined during a different time point in their time in the doctoral program. The researcher aimed to address this issue by inviting students from all first, second, and third year doctoral students however different number of students from different year still requires readers attention to this limitation. Lastly, while McLeroy et al.'s (1988) have been used to explore the RSE concept from a broader perspective, however, in the current study, institutional, community, and public policy factors multiple levels of the Ecological model have been collapsed into one systemic level. Thus, it is important to realize the limitations of such simplification which might that there could be institutional, community, and public policy related factors influencing counselor education doctoral students' RSE that have not been explored in the current study.

Implications for Counselor Education Stakeholders

With a more detailed RSE understanding, the current study findings provided a new leeway for broaden exploration of different patterns individuals might experience in the process

of researcher identity development. Counselor education doctoral students in this study appeared to think that many factors influenced their RSE. Exploration of these factors from a holistic perspective may establish the interpersonal and systemic understandings of RSE development processes, in addition to intrapersonal-focused content, while offering implications for each party (i.e., doctoral students, peers, mentors, faculty, doctoral programs). In the following sections, researcher discussed the implications of the current study for each stakeholder accordingly.

Implications for Counselor Education Doctoral Students

Current study findings suggested that RSE is a complex and nuanced concept that is not solely dependent on doctoral student-related factors. However, doctoral students held the initial factors influencing their RSE (e.g., skills, interest, activity, productivity). As presented in the *individual's intentionality in developing research competence* cluster, doctoral students perceive themselves as the active agents of their research training process and responsible for using available resources beyond program requirements. As future counselor educators, it appeared to be critical for doctoral students to advocate for themselves through making intentional decisions and seeking out opportunities to access available learning opportunities in and out of their doctoral programs. Based on various statements and clusters obtained in the current study, for example, doctoral students may explore research interests through attending workshops, peer dissertation proposals and defenses, or through reviewing conceptual and empirical scholarly resources to support their RSE. Considering their own role in a mentoring relationship, doctoral students may seek out mentors in or out of their program based on the shared research topic as well as methodological interests. Finally, doctoral students may consider seeking out collaborations with peers, which may feel less intimidating, while creating an environment for like-minded researchers to share their ideas and support each other in the process.

Implications for Mentors and Counselor Education Faculty

Throughout doctoral students' research training process, multiple parties, particularly mentors and faculty, appeared to be influential in responding to the questions on students' research capabilities.

In the current study findings, in a mentoring relationship, mentor-related factors were as important as student-related factors. Mentor's own research skills as well as their perceptions of mentee's research capabilities influenced doctoral students' RSE. Therefore, research mentors may consider paying attention to the presentation of their beliefs in their students' research skills and competence as much as their own research skills. While it may be easy to overlook, active acknowledgement of success (even small ones) may be as critical as encouraging doctoral students to do better. Furthermore, mentors may consider creating intellectually stimulating conversations and experiences, where doctoral students may feel comfortable learning from them. Mentors may want to communicate their expectations clearly, while supporting doctoral students by being available, inviting students to collaborate in research, and introducing students to professional activities. Additionally, mentors may want to reflect on their responses to the doctoral students throughout mentoring relationship, particularly how much respect they show to the students' ideas and needs, and how these messages are congruent in their verbal and non-verbal behaviors.

Regardless of having a mentoring relationship with the doctoral students or not, other faculty's behaviors and values also influenced doctoral students' RSE. Staying as active scholars and sharing their enthusiasm with students through talking about the attended conferences, completed presentation or published articles may be some ways that counselor education faculty

support doctoral students' RSE. Faculty may also want to consider the amount they spent with each doctoral student to ensure that equal opportunities may be provided to all doctoral students.

Implications for Counselor Education Doctoral Programs

Program-related factors in the current study included *program's research culture*. Research behaviors, values, expectations, attitudes, and norms as well as the expectations are all important parts of program research culture. Albeit being challenging, doctoral programs may particularly consider finding a healthy balance between the standards of accrediting organizations (i.e., CACREP), limited timeframe in the doctoral programs (i.e., three years), and student needs and goals. Findings from the *program's intentionality in developing research competence* cluster suggested that while learning new roles and growing into counselor educator identity, doctoral students need doctoral programs to be as intentional as possible to support their RSE.

In these intentional planning, doctoral programs may create ways to demonstrate acceptance and practice of different research styles (e.g., field, laboratory), emphasize and normalize the limited nature of research, and highlight the social and individual aspects of research. Additionally, programs may pay special attention to peer influence on doctoral students' RSE. For example, doctoral programs' intentional efforts to create cohesive, supportive, and collaborative interactions among doctoral student peers may be critical for cohort interactions, experiences, and the research as well as general culture of the program, while start modeling the collegial nature of research activities for these future counselor educators and leaders of the counseling field.

To ensure proper learning opportunity availabilities based on student needs and developmental levels, doctoral programs may consider designing research training experiences in

a more intentional and diverse manner by utilizing workshops, research teams, and graduate assistantship assignments along with available classes to ensure training in each of these areas. Findings suggested that doctoral students' needs from their research training process varies based on their year in the program. For example, first-year doctoral students were focused on their own research skills and development level. Thus, doctoral programs may consider structuring the first-year training procedures as well as processes in a way to allow exploration and understanding of self. In the current study, *application of research (skill)* have been identified as one of the most important factors for first, second, and third year doctoral students suggesting that more hands-on learning opportunities, where research in an applied manner may be prioritized, could help doctoral students improve their RSE throughout their training. On the other hand, when working with third-year doctoral students, doctoral programs and faculty may consider supporting students to focus on their own research skills by being available and offering different resources specific to their needs. Furthermore, per reported importance of mentoring relationship to second-year doctoral students' RSE, doctoral programs may consider structuring mentoring opportunities in which mentor and student match can be initiated from the beginning of doctoral training based on students' and faculty's needs and interests to allow time for connection and transition from faculty-student relationship to a mentoring relationship.

To sum up, as part of doctoral programs' intentional training practices in developing research competence, doctoral program leaders may (a) structure doctoral training through developmentally sequencing research and statistics courses, (b) integrate research into the program requirements and create hands on experiences with faculty/mentors (e.g., graduate assistantship assignments), and (c) provide opportunities for doctoral students to be part of research teams (e.g., mentoring assignments, laboratories).

Implications for Future Research

Based on the procedures as well as findings of this study, several questions remain unanswered and require further attention in future studies.

First, as presented in the limitations section, participants of the present study were mostly white and female. Thus, future studies focusing on more diverse group of doctoral students are needed. Furthermore, further research must explore how doctoral students' experiences from different institutions vary and how this variation influences the factors they might generate in relation to their RSE.

Given the diverse nature of research training experiences, qualitative or mixed methods approaches may be better fit to understand and operationalize each RSE factor defined in this study. Future studies exploring mentorship relationship from both mentor and doctoral students' perspectives may contribute to our understanding of their relationships with RSE. Furthermore, exploring peer interactions and outcomes of these interactions through phenomenological studies may help counselor education doctoral programs to understand different components of peer dynamics and their impact on doctoral students' RSE. Additionally, qualitative examinations of other faculty's role in doctoral students' RSE development may also complement the findings of the current study.

Doctoral students' developmental level appeared as an influential factor of RSE in the current study. Thus, future studies on doctoral students' RSE conceptualization specifically focusing on the influence of their year in the program through longitudinal or cross-sectional methodologies are warranted. Furthermore, taking the developmental nature of RSE concept into consideration, researcher may consider exploring RSE concept with counseling master's

students as well as early career faculty (i.e., assistant professors) which may help us understand the RSE concept from a developmental perspective.

Conclusion

This study highlighted the importance of understanding RSE concept from a multilayered holistic perspective. Although many questions are still unanswered, the current study findings highlighted that counselor education doctoral students' belief in their research abilities is not the only factor influencing their RSE. Counselor education doctoral students' RSE must be examined and attended from a more complex understanding including peers, mentors, faculty, and doctoral programs as well as the outside support during the research training process. In other words, understanding RSE from a holistic perspective requires studying of all these aspects as well as creation of environments attending all these aspects.

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APPENDICIES

APPENDIX A

MASTER LIST OF INSTRUMENTS FOR EACH FACTOR

Research Self-Efficacy (RSE)
Research Self-Efficacy Scale (RSES; Greeley et al., 1989) *
Self-Efficacy in Research Measure (SERM Phillips & Russel, 1994) *
General Self-Efficacy Scale (GSE; Schwarzer & Jerusalem, 1995)
Self-Efficacy in Research Measure (SERM-S; Kahn & Scott, 1997)
Research Attitudes Measure (RAM; O'Brien, Malone, Schmidt & Lucas, 1998) *
Research Self-Efficacy (RSE; Holden et al., 1999) *
Research Self-Efficacy (combined scale; Forester, Kahn, & Hesson-McInnis, 2004)
Clinical Research Appraisal Inventory (CRAI; Mullikin, Balken & Betz, 2007) *
Short version of SERM (SERM-S; Morrison & Lent, 2014)

Other-Efficacy
Research Other-Efficacy Scale (Morrison & Lent, 2014) *

Relation- Inferred Self-Efficacy (RISE)
Relation-Inferred Research Self-Efficacy Scale (Morrison & Lent, 2014) *

Research Mentorship
Mentoring Functions Scale (MFS; Noe, 1988) -Adequacy of mentoring relationship
Mentoring Costs and Benefits Scale (Ragins & Scandura, 1994)
Willingness to Mentor Scale (Ragins & Scandura, 1994)
The Interest in Being Mentored Scale (IBM; Hollingsworth, 2000)
Importance of Mentoring Behaviors (Hollingsworth, 2000)
Student Mentoring Costs and Benefits Scale (S-MCB; Hollingsworth, 2000)
Advisory Working Alliance Inventory Student Form (AWAI-S; Schlosser & Gelso, 2001) *
Research Mentoring Experiences Scale (RMES; Hollingsworth & Fassinger, 2002) *
Advisory Working Alliance (AWA; Morrison & Lent, 2014)

Research Training Environment
Survey on Research Training (SORT; Royalty & Reising, 1986)
Research Training Environment Scale (RTES; Royalty, Gelso, Mallinckrodt, & Garrett., 1986)
Research Training Environment Scale-Revised (RTES-R; Gelso, Mallinckrodt, & Judge, 1996) *
Research Training Environment Scale-Revised-Shortened (RTEs-R-S; Kahn & Miller, 2000)
Research Training Environment Scale-Revised-Shortened (RTE-R-SS; Morrison & Lent, 2014)
Research Training Environment Scale-Revised-Shortened (RTES-R-S; Hollingsworth & Fassinger, 2000)

Research Interest
The Attitudes Towards Research Scale (ATR; Royalty, Gelso, Mallinckrodt, & Garrett., 1986) *
Interest in Scientist-Practitioner Activities (SPI; Leong & Zachar, 1991) *
Interest in Research Questionnaire (IRQ; Bishop & Bischke, 1994) *

Research Motivation

Self-Handicapping Scale (SHS; Strube, 1986)
The Academic Motivation Scale (AMS; Vallerand et al., 1992)
Research Motivation Scale (RMS; Deemer et al., 2010) *

Research Productivity
Scholarly Productivity Survey (SPS; Royalty & Magoon, 1985) *
Research Productivity (Barrom et al., 1988)
The Scholarly Activity Scale (SAS; Kahn & Scott, 1997) *

Note: Only the factors with existing measures included. Measures are listed chronologically. Measures with "*" are the measures included to this study.

APPENDIX B

LETTERS OF PERMISSION

Research Attitudes Measure (RAM; O'Brien, Malone, Schmidt & Lucas, 1998) *

Karen OBrien <kmobrien@umd.edu>
Sun, Sep 15, 2019, 11:03 AM
to me

Dear Zahide,

Thank you for your interest in my work. As we were working on developing our research self-efficacy measure, the article below was published. We stopped our work as the article did an excellent job regarding how to assess this construct. Hope the following is helpful to you, KOB

Factor Structures of Three Measures of Research Self-Efficacy
Michelle Forester, Jeffrey H. Kahn, Matthew S. Hesson-McInnis
First Published February 1, 2004 Other
https://doi.org/10.1177/1069072703257719
--
Karen M. O'Brien, Ph.D.
Professor and Associate Chair for Undergraduate Studies
Department of Psychology, University of Maryland, College Park, MD 20742
kmobrien@umd.edu 301.405.5812
Pronouns: She/Her/Hers

RESEARCH WEBSITE:
http://counselingpsychologyresearch.weebly.com/index.html

Research Self-Efficacy (RSE; Holden et al., 1999)

Gary Holden <gh5@nyu.edu>
Attachments
Wed, Sep 11, 2019, 10:34 AM
to me

Hi Zahide:

Thank you for your interest in our work. I have attached the RSE. The scale is on the second page. The first page is the anonymous ID system we developed to do pre-post testing. It is not required that you use this. If you would like I can send you a newer version of the ID system which does not use the sex binary factor. I have also attached a graphic overview of our studies in this area, as well as the JSWE article on the RSE which contains any psychometric information.

Let me know if you have other questions.

Regards, gary

Clinical Research Appraisal Inventory (CRAI; Mullikin, Balken & Betz, 2007)

Lori Bakken <lbakken@wisc.edu>
Attachments
Mon, Sep 16, 2019, 10:29 AM
to me

Dear Zahide,

Thank you for expressing an interest in the CRAI. Attached is the inventory along with an article we wrote about its psychometric properties. Additional articles have been written on the CRAI's psychometric properties, most of which can be found in the medical/health literature. If you decide to use the CRAI, please let us know how it performs.

Sincerely,
Lori

Lori L. Bakken, M.S., Ph.D.
Professor and Associate Chair, Civil Society & Community Studies
Evaluation Specialist, Division of Extension
Author, Evaluation Practice for Collaborative Growth, Oxford University Press
University of Wisconsin-Madison, School of Human Ecology

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Madison WI 53706
Office Phone: (608) 890-0221

Research Other-Efficacy & Relation-Inferred Research Self-Efficacy Scales (Morrison & Lent, 2014)

Ashley Morrison <m.ashleymorrison@gmail.com>

Attachments

Thu, Sep 26, 2019, 11:28 AM

to me

Hi Zahide,

I have attached what I think is the final version the supplemental materials from the 2014 article that includes the items for each measure and their factor loadings. Let me know if you have any questions.

Best,

Ashley

Research Mentoring Experiences Scale (RMES; Hollingsworth & Fassinger, 2002)

Ruth E. Fassinger <rfassing@umd.edu>
Tue, Sep 24, 2019, 11:48 AM
to me

Hello-
Sorry for the delay in responding.
You are welcome to use this, but the only info we have is what is in the articles that have used it. Dr. Hollingsworth passed away several years ago and she was the one who had access to the scale and the info. So feel free to use it but you will have to use whatever info you have in published articles. You also could access Merris Hollingsworth's dissertation and see if you can find more info there -- go through Dissertation Abstracts.
Good luck with your project.
Ruth Fassinger

On Tue, Sep 10, 2019 at 8:35 PM ZAHIDE SUNAL <zsuna001@odu.edu> wrote:

--
Ruth E. Fassinger, Ph.D.
Professor Emerita, University of Maryland
President, Society of Counseling Psychology, Division 17 of the American Psychological Association

Advisory Working Alliance Inventory Student Form (AWAI-S; Schlosser & Gelso, 2001) & Research Training Environment Scale-Revised (RTES-R; Gelso, Mallinckrodt, & Judge, 1996) &
The Attitudes Towards Research Scale (ATR; Royalty, Gelso, Mallinckrodt, & Garrett., 1986)

Charles J. Gelso <gelso@umd.edu>
Tue, Sep 10, 2019, 9:11 PM
to me

Dear Zahide,
You certainly have my permission to use any of the measures. Best of luck in your research.

Dr. Gelso

Interest in Scientist-Practitioner Activities (SPI; Leong & Zachar, 1991)

Peter Zachar <pzachar@aum.edu>
Attachments
Thu, Sep 12, 2019, 12:30 PM
to me, fleong@msu.edu

Dear Zahide – sure feel free to use it. The psychometric information is in these two articles. The only thing we ask is that you send a copy of the results to Fred.

One other thing – I now think the best factor structure is a 3 factor structure. Practitioner interests, research interests, and statistics/methodology interests.

Peter

Peter Zachar, Ph.D.

Professor of Psychology
Associate Dean, College of Sciences

Auburn University Montgomery

PO Box 244023
Montgomery, AL 36124

Interest in Research Questionnaire (IRQ; Bishop & Bischke, 1994)

Bieschke, Kathleen kxb11@psu.edu via pennstateoffice365.onmicrosoft.com

Attachments

Wed, Sep 11, 2019, 9:33 PM

to me, bishop.rosean@mayo.edu

Dear Zahide,

Please find attached the IRQ and the available psychometric information.

Best,

Kathy

Research Motivation Scale (RMS; Deemer et al., 2010)

Deemer, Eric D <edeemer@purdue.edu>
Attachments
Wed, Sep 11, 2019, 9:37 AM
to me

Hi Zahide,

Absolutely, you are more than welcome to use the scale. Attached are the items and the article, which has some information about the scale's construct validity. Good luck with your research!

Eric

APPENDIX C

RECRUITMENT EMAIL

Subject: Invitation to participate in a research about Counselor education Doctoral Students' Research Self-Efficacy

Dear Potential Participant,

We are sending you this e-mail to invite you to participate in an IRB approved research study that will help us learn more about Counselor education Doctoral Students' Research Self-Efficacy (RSE). Your participation in this study is voluntary; however, in order to take part in this study, you must be **(1) at least 18 years of age and (2) enrolled in a CACREP-accredited doctoral counselor education program**. You may benefit by participating in this study by increasing your awareness on your research self-efficacy.

This study involves three parts that will be completed in two months. You are welcome to participate one or all parts described below:

Part 1. Attending the first focus group session (approximately 90 minutes): You will be asked to review a list of statements representing doctoral students' research self-efficacy and create new ones if you see fit. (October 2019)

Part 2. Completion of a data collection packet that will be mailed to you (approximately 2 hours): You will be mailed a data collection packet where you will be asked to sort and rate a list of statements. After completing this task, you will mail the data back to the researcher in prepaid envelopes. (February 2020)

Part 3. Attending the second focus group session (approximately 2 hours): Lastly, you are invited to participate in an online focus group. In the focus group, the researcher will present the visual representation of the results (maps). You will engage in a discussion with the other participants on the results to finalize the data analyses and results of the study. (February 2020)

We are aware of the amount of time commitment for this study. We also hope that you find the topic relevant to your professional identities. **In order to show our appreciation, participants complete (1) only one of the three parts will receive a $10 Amazon gift card, (2) two of the three parts will receive a $20 Amazon gift card, and (3) all three parts will receive a $30 Amazon gift card.**

If you are interested in participating, please follow the survey link below by DATE. Please read over the informed consent carefully and click "I Agree" if you choose to participate. You will have the option at the end of the survey to indicate your interest in attending the focus group sessions.

LINK

Additionally, please feel free to forward this email to anyone you know who would be eligible to and interested in participating. This will help us to get more participants with increased validity of our results.

Many thanks for your consideration and assistance!

Zahide Sunal
Doctoral Student
Old Dominion University

Gulsah Kemer
Assistant Professor
Counseling & Human Services Department
Old Dominion University

APPENDIX D

INFORMED CONSENT

Project Title: Doctoral Students' Research Self-Efficacy: A Concept Mapping Approach with Counselor Education Doctoral Students

Project Director: Dr. Gulsah Kemer

Student Researcher: Zahide Sunal

What is the study about?

This is a research project. The goal of this study is to understand the conceptual structure of conceptualize of RSE for counselor education doctoral students' from CACREP-accredited programs research self-efficacy (RSE) through data collection forms and your participation in a focus group. The intent of this study is to develop and interpret concept maps that will lead to a better understanding of counselor education doctoral students' RSE.

Why are you asking me?

Participants in this study are at least 18 years of age and self-identify as being registered in a CACREP-accredited doctoral counselor education program.

What will you ask me to do if I agree to be in the study?

If you agree to participate in this study, you will be agreeing to attend at least one of following three parts: (1) participating to the first focus group session, (2) completing a packet that will be mailed to you at the address of your choice, and (3) participating to the second focus group session

Part 1 - If you indicate your interest to attend the first focus group session, you will indicate this at the end of the demographic questionnaire and the student researcher will contact you with more information about the time and location of the focus group. The first focus group session will involve a presentation of statements pool and the group facilitator will engage you in a discussion with other participants about your perspectives on the statement pool items or new items created in this group.

Part 2 - You will receive a list of statements in the mail to complete sorting and rating tasks. You will specify your address of choice as a part of the demographic questionnaire. Instructions will be provided on how to complete each form or task. Please complete this step individually and privately. An envelope and postage will be provided for you to mail them back to the student researcher within two weeks of receiving the forms in the mail. The student researcher will contact you through your preferred contact method (email or phone) if your materials have not been received after two weeks from distribution. This contact will only serve as a reminder to return the materials, and you may opt out of the study at this point or any other point in the process. If you are not interested in attending the online focus group, then your participation in this study will end at this point.

Part 3- If you indicate your interest to attend the second focus group session, you will indicate this at the end of the demographic questionnaire and the student researcher will contact you with more information about the time and location of the focus group. The second focus group

session will involve a presentation of the results and maps, and the group facilitator will engage you in a discussion with other participants about your perspectives on the results and maps.

If you agree to participate in the focus group sessions, you also are consenting to respect the privacy of other group members. You are agreeing to not ask for other group members' names, and to keep identifying information and responses during the focus group session confidential, meaning that you will not discuss other participants or what is stated during the focus groups outside of this research study.

This study is asking you to reflect on your experience regarding your research self-efficacy. You may withdraw from the study or leave at any time. Additionally, you may follow up with Zahide Sunal at zsuna001@odu.edu, should you want to discuss any further questions you might have.

Is there any recording?

The focus group session will be recorded so that the researchers can review the group discussion when interpreting and writing up the results of this study. Because your voice will be potentially identifiable by anyone who hears the tape, your confidentiality for things you say on the tape cannot be guaranteed although the researcher will limit access to the tapes as described below.

What are the dangers to me?

There is minimal risk to participating in this study as your identity will be revealed to other focus group participants. The researchers are ethically and legally bound to protect participants' identities and responses in the focus groups; the researchers, however, cannot guarantee that other focus group participants will keep participants' identities and responses confidential. Further, there is potential for you to encounter other group members outside of the focus group sessions. Finally, the data collection forms will be mailed to you so there is a risk of others noting your participation in this study. Please choose an address for this mailing in which you are comfortable receiving the forms, and please fill out the forms individually and on your own and seal the forms in the mailing envelope upon completion to protect the privacy and confidentiality of your responses.

If you have any concerns about your rights, how you are being treated or if you have questions, want more information or have suggestions, please contact Zahide Sunal at zsuna001@odu.edu.

Are there any benefits to me for taking part in this research study?

Participants may increase their awareness of their research self-efficacy by participating in this study.

Will I get paid for being in the study? Will it cost me anything?

We are aware of the great amount of commitment required for this study. Thus, in order to show our appreciation, participants who complete (1) only one of the three parts will receive a $10 Amazon gift card, (2) two of the three parts will receive a $20 Amazon gift card, and (3) all three parts will receive a $30 Amazon gift card.

How will you keep my information confidential?

All information obtained in this study is strictly confidential unless disclosure is required by law. You will be assigned an ID number at the beginning of the study, which will be used to identify your sorting task, rating task, and demographic questionnaires. Therefore, no identifying information will be directly linked to the data acquired in the focus group sessions or to the

mailed packets you complete. Identifying information (that is, your name, email, phone, and address) collected for the purposes of contact and compensation will be kept in a password protected database on a password-protected account on the laptop of the student researcher. All audio recordings and paper documents will be kept in a locker at student researcher's home. The data collected through this study will be kept for five years following completion of this study. Then, the data on computer files will be completely erased and destroyed, and paper documents will be shredded.

What if I want to leave the study?

You have the right to refuse to participate or to withdraw at any time, without penalty. If you do withdraw, it will not affect you in any way. If you choose to withdraw, you may request that any of your data which has been collected be destroyed unless it is in a de-identifiable state.

What about new information/changes in the study?

If significant new information relating to the study becomes available which may relate to your willingness to continue to participate, this information will be provided to you.

Voluntary Consent by Participant:

By checking the "I Agree" box below, you are indicating that you have read and understand the procedure described above and voluntarily agree to participate in this study. You are also indicating that you understand any risks and benefits that may be involved in this study. Before you proceed to the survey, please print a copy of this consent for your records. Once you have checked the "I Agree" box, click "Next" to be taken to the beginning of the survey. Thanks for your time and input!

I Agree □

APPENDIX E

DEMOGRAPHIC QUESTIONNAIRE

Instructions: Fill in the blanks for each question or circle the appropriate responses.

Participant ID: _____
Email: _____

1. What is your gender?
2. What is your age in years? _____
3. What is your ethnic background? (Select all that apply)
    a. African American
    b. Asian/Pacific Islander
    c. Caucasian
    d. Hispanic
    e. Native American
    f. Other (please specify) _____
4. What was your undergraduate degree in? _____
5. How many research and statistics courses or training have you complete before your master's program? _____
6. How many research projects have you involved before your master's program? _____
7. How many publications have you had before your master's program? _____
8. How many conference presentations have you had before your master's program? _____
9. What was your master's program concentration (e.g., school counseling, mental health counseling)? _____
10. How many research and statistics courses or training have you completed in your master's program? _____
11. How many research projects have you involved in your master's program? _____
12. How many publications have you had in your master's program? _____
13. How many conference presentations have you had in your master's program? _____
14. Have you completed your master's in a CACREP-accredited program?
    a. Yes
    b. No
15. How many semesters have you completed in your doctoral program? _____
16. How many research and statistics courses or training have you complete in your doctoral program? _____
17. How many research projects have you involved in your doctoral program? _____
18. How many publications have you had in your doctoral program? _____
19. How many conference presentations have you had in your doctoral program? _____
20. Please select all that applies to you regarding your career aspirations after completing the doctoral degree
    a. Tenure track faculty position
    b. Non-tenure track faculty position
    c. Adjunct faculty position
    d. Counselor position

e. Administrative position
f. Other_____

21. Which year are you in your doctoral program?
    a. First year
    b. Second year
    c. Third year
    d. 3+ year
22. Have you completed COMPs? Y/N
23. Have you defended your dissertation proposal? Y/N
24. Have you defended your dissertation? Y/N
25. How familiar are you with the research self-efficacy (RSE) concept?

0-Not at all familiar
1-Slightly familiar
2-Somewhat familiar
3-Moderately familiar
4-Extremely familiar

All participants will receive a $10 Amazon gift card for each part they complete.

APPENDIX F

DATA COLLECTION PACKET INFORMATION FOR STRUCTURING OF STATEMENTS

1. Address Request Letter to Participants Interested to Participate in Round 2
2. Instructions Letter to Participants Partaking in Round 2
3. Data Packet Material 1
4. Data Packet Material 2: Instructions for Completing and Returning the Packets
5. Data Packet Material 3: Rating Form

Address Request Letter to Participants Interested to Participate in Round 2

Subject line: CES Doctoral Students' Research Self-Efficacy Study

Hello XXX,

Thank you for completing the informed consent and the demographic questionnaire of my study on counselor education and supervision doctoral students' research self-efficacy. Part 1 of the study is completed. I am currently sending data packages to the participants for Part 2.

> **Part 2. Completion of a data collection packet that will be mailed to you** (approximately 2 hours): You will be mailed a data collection packet where you will be asked to sort and rate a list of statements. After completing this task, you will mail the data back to the researcher in prepaid envelopes.

If you are interested to be a participant in Part 2, please send me your address to receive the data package:

Name:
Address:
Address 2:
City/Town:
State:
ZIP:

Thank you for your time and consideration. Looking forward to hearing from you!

Warmly,

Zahide

Instructions Letter to Participants Partaking in Round 2

Dear XXX,

Thank you for your participation in my study on counselor education and supervision doctoral students' research self-efficacy. I have mailed the data packet for Part 2 to you this morning. You are expected to receive the packet sometime within 3 to 5 business days. I would appreciate it if you send me an email when you receive the packet.

Your packet should include:

- A general introduction letter,
- An instructions sheet,
- A set of rating form,
- An envelope with the statements for you to sort,
- Empty envelopes,
- Big empty envelope for you to return the packet.

Please let me know if you have any questions at any time. Thank you for your time and participation!

Warmly,
Zahide

Data Packet Material 1

DATE

Dear [insert first name],

Thank you for your participation in my study on counselor education and supervision doctoral students' research self-efficacy. This packet contains the data collection forms for you to complete for Part 2 of this study. The next page contains the instructions for completing the documents and materials in this packet.

Please read the instructions carefully, complete the sorting and rating tasks in suggested orders, and return the materials in the envelope provided by: February 24, 2020.

You will receive a $10 gift card upon receipt of your packet. Please email me at zsuna001@odu.edu if you have any questions about completing this packet.
Thank you for your time and participation!

Warmly,
Zahide

Data Packet Material 2: Instructions for Completing and Returning the Packets

Dear [insert first name],

In this step, please follow the instructions in the ORDER they are presented below:

1. **Sorting Task:** Please read the following instructions for the stack of cards with printed statements:
   - Sort the cards with statements into piles based on similarity of the statements.
   - Each statement must belong to *only* 1 pile. If a statement seems to fit several piles, then you must select the 1 pile into which the statement best fits.
   - A statement can be in a pile by itself.
   - Once you have sorted all the statements into piles, place each pile separately into one of the small envelopes and write a word or short phrase describing each pile on the envelope.
2. **Rating Task:** Think about your current research self-efficacy. Using the **rating from** below, please circle the appropriate response for each statement (on a scale of 0: "Not important at all" to 10: "Very important") based on how important the statement is to your current research self-efficacy. When you rate the statements, try to use the full range of rating values (e.g., 0 to 10)."
3. Place all materials into the provided envelope and mail back to the student researcher by February 24, 2020.

Data Packet Material 3: Rating Form

Rate each statement according to how important it is to **your current research self-efficacy.**

Statements	0 = Not important at all 5= Moderately important 10 =Very important
1. Selecting a suitable topic area for my study	0 1 2 3 4 5 6 7 8 9 10
2. Refining a problem so it can be investigated	0 1 2 3 4 5 6 7 8 9 10
3. Organizing my research ideas in writing	0 1 2 3 4 5 6 7 8 9 10
4. Placing my study in the context of existing research and justify how it contributes to important questions in the area	0 1 2 3 4 5 6 7 8 9 10
5. Relating specific questions of interest to the underlying theory	0 1 2 3 4 5 6 7 8 9 10
6. Consulting senior researchers for ideas	0 1 2 3 4 5 6 7 8 9 10
7. Initiating research collaborations with peers	0 1 2 3 4 5 6 7 8 9 10
8. Sustaining effective collaborations	0 1 2 3 4 5 6 7 8 9 10
9. Working interdependently in a research group	0 1 2 3 4 5 6 7 8 9 10
10. Explaining the historical events that had significant impact on the federal regulations for the protection of human subjects	0 1 2 3 4 5 6 7 8 9 10
11. Describing appropriate recruitment and retention methods used in research	0 1 2 3 4 5 6 7 8 9 10
12. Writing a human subjects consent form containing the appropriate elements	0 1 2 3 4 5 6 7 8 9 10
13. Describing and discussing ethical issues involved in conducting research	0 1 2 3 4 5 6 7 8 9 10
14. Being knowledgeable and respectful of diverse ethical challenges associated with conducting research with minority populations	0 1 2 3 4 5 6 7 8 9 10
15. Comparing major types of studies (e.g., case reports, case controls, cross-sectional, longitudinal and epidemiological studies, clinical trials)	0 1 2 3 4 5 6 7 8 9 10
16. Choosing an appropriate research design that will answer a set of research questions and/or test a set of hypotheses	0 1 2 3 4 5 6 7 8 9 10
17. Designing a study using quantitative methods (e.g., experimental, quasi-experimental designs, clinical trials)	0 1 2 3 4 5 6 7 8 9 10

18. Determining the universe, population, and appropriate sample for a given study	0 1 2 3 4 5 6 7 8 9 10
19. Selecting methods of data collection appropriate to the study population and variable(s) of interest	0 1 2 3 4 5 6 7 8 9 10
20. Evaluating and selecting reliable and valid instruments to measure or assess variables	0 1 2 3 4 5 6 7 8 9 10
21. Stating the relationship between the chosen research design, the type of data collected, and the necessary statistical techniques	0 1 2 3 4 5 6 7 8 9 10
22. Analyzing data according to their level of measurement and the research design	0 1 2 3 4 5 6 7 8 9 10
23. Providing direction to computer specialists or statisticians on how to handle missing data	0 1 2 3 4 5 6 7 8 9 10
24. Explaining the outcome of given analysis in terms of the originally stated hypotheses or research questions	0 1 2 3 4 5 6 7 8 9 10
25. Recruiting and screening research project staff	0 1 2 3 4 5 6 7 8 9 10
26. Training assistants to collect data	0 1 2 3 4 5 6 7 8 9 10
27. Asking staff to leave the project team when necessary	0 1 2 3 4 5 6 7 8 9 10
28. Maintaining a log of my research process (e.g., experiments conducted, major decisions, analyses performed)	0 1 2 3 4 5 6 7 8 9 10
29. Organizing data to store and analyze in a computer system	0 1 2 3 4 5 6 7 8 9 10
30. Speaking with a person at the funding agency regarding my project or project ideas	0 1 2 3 4 5 6 7 8 9 10
31. Preparing a research proposal suitable for submission in my research area	0 1 2 3 4 5 6 7 8 9 10
32. Locating appropriate forms for a grant application	0 1 2 3 4 5 6 7 8 9 10
33. Establishing collaborator and consultant agreements for a grant application	0 1 2 3 4 5 6 7 8 9 10
34. Obtaining necessary signature for institutional approval of a grant application	0 1 2 3 4 5 6 7 8 9 10
35. Obtaining or purchasing appropriate supplies and equipment for my research study	0 1 2 3 4 5 6 7 8 9 10
36. Integrating the research findings into the existing literature by discussing what is known, unknown, and what requires further study	0 1 2 3 4 5 6 7 8 9 10
37. Selecting a journal for a manuscript submission	0 1 2 3 4 5 6 7 8 9 10

38. Writing a literature review that critically synthesizes the literature relevant to my own research question	0 1 2 3 4 5 6 7 8 9 10
39. Writing the results section of a research paper that clearly summarizes and describes the results, free of interpretative comments	0 1 2 3 4 5 6 7 8 9 10
40. Writing a discussion section for a research paper that articulates the importance of my findings relative to other studies in the field	0 1 2 3 4 5 6 7 8 9 10
41. Describing the stages of manuscript review	0 1 2 3 4 5 6 7 8 9 10
42. Designing visual presentations (posters, slides, graphs, pictures)	0 1 2 3 4 5 6 7 8 9 10
43. Knowing which statistics to use	0 1 2 3 4 5 6 7 8 9 10
44. Controlling for threats to validity	0 1 2 3 4 5 6 7 8 9 10
45. Using statistical packages (e.g., SPSS-X, SAS)	0 1 2 3 4 5 6 7 8 9 10
46. Selecting the appropriate analyses for a research project	0 1 2 3 4 5 6 7 8 9 10
47. Interpreting computer printouts of my analyses	0 1 2 3 4 5 6 7 8 9 10
48. Using various technological advances effectively in carrying out research (e.g., the internet)	0 1 2 3 4 5 6 7 8 9 10
49. My mentor's ability to write the introduction and discussion sections for a research paper for publication	0 1 2 3 4 5 6 7 8 9 10
50. My mentor's ability to write the method and results sections of a manuscript	0 1 2 3 4 5 6 7 8 9 10
51. My mentor's ability to utilize resources for needed help	0 1 2 3 4 5 6 7 8 9 10
52. My mentor's ability to use statistical packages (e.g., SPSS–X, SAS)	0 1 2 3 4 5 6 7 8 9 10
53. My mentor's competence to understand computer printouts	0 1 2 3 4 5 6 7 8 9 10
54. My mentor's skills to design and conduct qualitative studies	0 1 2 3 4 5 6 7 8 9 10
55. My mentor's perception of my competence to formulate hypotheses	0 1 2 3 4 5 6 7 8 9 10
56. My mentor's perspectives on my skills to write the introduction and literature review for a research study	0 1 2 3 4 5 6 7 8 9 10
57. My mentor's views on my competence to defend a research study	0 1 2 3 4 5 6 7 8 9 10
58. My mentor's views on my ability to keep records during a research project	0 1 2 3 4 5 6 7 8 9 10

59. My mentor's views on my competence to select an appropriate approach to analyzing qualitative data	0 1 2 3 4 5 6 7 8 9 10
60. Feeling like my mentor does not like me very much	0 1 2 3 4 5 6 7 8 9 10
61. My mentor's kindness when commenting about my work	0 1 2 3 4 5 6 7 8 9 10
62. My mentor's encouragement for my accomplishments	0 1 2 3 4 5 6 7 8 9 10
63. My mentor taking my ideas seriously	0 1 2 3 4 5 6 7 8 9 10
64. Feeling uncomfortable working with my mentor	0 1 2 3 4 5 6 7 8 9 10
65. Being introduced to professional activities (e.g., conferences, submitting articles for journal publication) by my mentor	0 1 2 3 4 5 6 7 8 9 10
66. Being invited to be a responsible collaborator in my mentor's work	0 1 2 3 4 5 6 7 8 9 10
67. Having productive meetings with my mentor	0 1 2 3 4 5 6 7 8 9 10
68. My mentor's facilitation of my professional development through networking	0 1 2 3 4 5 6 7 8 9 10
69. Learning from my mentor by watching them	0 1 2 3 4 5 6 7 8 9 10
70. My mentor's efforts to make program requirements as rewarding as possible	0 1 2 3 4 5 6 7 8 9 10
71. My mentor's availability when I need them	0 1 2 3 4 5 6 7 8 9 10
72. Seeing things differently from my mentor	0 1 2 3 4 5 6 7 8 9 10
73. Having different interests from my mentor	0 1 2 3 4 5 6 7 8 9 10
74. Having an intellectually stimulating relationship with my mentor	0 1 2 3 4 5 6 7 8 9 10
75. Being acknowledged by my program for scholarly achievements	0 1 2 3 4 5 6 7 8 9 10
76. My faculty's reinforcement for the scholarly achievements of only a few selected students	0 1 2 3 4 5 6 7 8 9 10
77. Feeling like my mentor expects too much from me and my research projects	0 1 2 3 4 5 6 7 8 9 10
78. My mentor's understanding and acceptance of any piece of research will have its methodological problems	0 1 2 3 4 5 6 7 8 9 10
79. Being encouraged to get involved in some aspects of research early in my graduate training	0 1 2 3 4 5 6 7 8 9 10
80. Having opportunities to be a part of research teams in my program	0 1 2 3 4 5 6 7 8 9 10
81. Having faculty producing clinically relevant research	0 1 2 3 4 5 6 7 8 9 10

82. Being in a program in which many different research styles (e.g., field, laboratory) are acceptable	0 1 2 3 4 5 6 7 8 9 10
83. Having anxiety provoking research experience prior to dissertation	0 1 2 3 4 5 6 7 8 9 10
84. Getting the impression in my program that my research work has to be of great value in the field to be worth anything	0 1 2 3 4 5 6 7 8 9 10
85. Taking statistics courses that are taught in a way that is sensitive to my level of development as researchers	0 1 2 3 4 5 6 7 8 9 10
86. Taking statistics courses that show me how statistics are actually used in counseling research	0 1 2 3 4 5 6 7 8 9 10
87. Sensing that being on a research team can be intellectually stimulating	0 1 2 3 4 5 6 7 8 9 10
88. Being enabled to see the relevance of research to clinical service in my program	0 1 2 3 4 5 6 7 8 9 10
89. In my research training, focusing on understanding the logic of research design and not just statistics	0 1 2 3 4 5 6 7 8 9 10
90. Sensing that there is a general attitude in my program that there is one best way to do research	0 1 2 3 4 5 6 7 8 9 10
91. Getting high quality training here in the use of statistics in applied research (e.g., counseling research)	0 1 2 3 4 5 6 7 8 9 10
92. Having a training environment promoting the idea that although parts of research must be done alone, other parts may involve working closely with others	0 1 2 3 4 5 6 7 8 9 10
93. Having faculty who seems interested in understanding and teaching how research can be related to counseling practice	0 1 2 3 4 5 6 7 8 9 10
94. During our coursework, receiving training on a wide range of research methodologies (e.g., field, laboratory, survey approaches)	0 1 2 3 4 5 6 7 8 9 10
95. Feeling like I need to choose a research topic of interest to my mentor at the expense of my own interests	0 1 2 3 4 5 6 7 8 9 10
96. Feeling like my research ideas are squashed during the process of collaborating with faculty members, so that the finished project no longer resembles my original idea	0 1 2 3 4 5 6 7 8 9 10
97. Being rarely taught to use research findings to inform my work with clients	0 1 2 3 4 5 6 7 8 9 10
98. Having faculty showing excitement about research and scholarly activities	0 1 2 3 4 5 6 7 8 9 10
99. Being interested in leading a research team	0 1 2 3 4 5 6 7 8 9 10

100. Being passionate about designing a study	0 1 2 3 4 5 6 7 8 9 10
101. Being eager to have research activities as part of every work week	0 1 2 3 4 5 6 7 8 9 10
102. Being passionate about analyzing data	0 1 2 3 4 5 6 7 8 9 10
103. Being passionate about writing for publication/presentation	0 1 2 3 4 5 6 7 8 9 10
104. Being curious about developing funding proposals	0 1 2 3 4 5 6 7 8 9 10
105. Being interested in conducting a literature review	0 1 2 3 4 5 6 7 8 9 10
106. Being interested in taking a statistics course	0 1 2 3 4 5 6 7 8 9 10
107. Being keen on presenting research findings at a conference	0 1 2 3 4 5 6 7 8 9 10
108. Being eager to supervise student's research projects	0 1 2 3 4 5 6 7 8 9 10
109. Being interested in reviewing journal articles	0 1 2 3 4 5 6 7 8 9 10
110. Being passionate about serving as an editor for a scientific journal	0 1 2 3 4 5 6 7 8 9 10
111. Being curious about learning about a new statistical procedure	0 1 2 3 4 5 6 7 8 9 10
112. Being keen on brainstorming about possible research with peers	0 1 2 3 4 5 6 7 8 9 10
113. Being eager to develop new explanations of well accepted empirical studies	0 1 2 3 4 5 6 7 8 9 10
114. Feeling satisfied when conducting research	0 1 2 3 4 5 6 7 8 9 10
115. Earning the respect of my peers when conducting research	0 1 2 3 4 5 6 7 8 9 10
116. My desire to avoid difficult research projects because I am concerned that I may fail	0 1 2 3 4 5 6 7 8 9 10
117. My desire to leave my mark on my field	0 1 2 3 4 5 6 7 8 9 10
118. My eagerness to receive awards for my scientific accomplishments	0 1 2 3 4 5 6 7 8 9 10
119. The fact that research in and of itself is enjoyable for me	0 1 2 3 4 5 6 7 8 9 10
120. Number of articles I have submitted to refereed journals	0 1 2 3 4 5 6 7 8 9 10
121. Number of published manuscripts (either empirical or otherwise) I have authored or coauthored in a refereed journal	0 1 2 3 4 5 6 7 8 9 10
122. Quantity of unpublished empirical manuscripts I have authored or coauthored	0 1 2 3 4 5 6 7 8 9 10
123. Quantity of manuscripts I am currently in the process of preparing to submit for publication (i.e., writing the manuscript)	0 1 2 3 4 5 6 7 8 9 10

124. Quantity of projects I am currently conducting statistical analyses on data	0 1 2 3 4 5 6 7 8 9 10
125. Collaborating on research with other doctoral students within and across programs	0 1 2 3 4 5 6 7 8 9 10
126. My perception of my peers (e.g., support, research activity, personalities, cohort dynamics)	0 1 2 3 4 5 6 7 8 9 10
127.Having a support system outside of program (e.g., family, friends)	0 1 2 3 4 5 6 7 8 9 10
128. Having research related graduate assistantship assignment	0 1 2 3 4 5 6 7 8 9 10
129. Having a peer mentor	0 1 2 3 4 5 6 7 8 9 10
130. Research emphasis in my institution	0 1 2 3 4 5 6 7 8 9 10
131. Mentorship prior to my doctoral studies	0 1 2 3 4 5 6 7 8 9 10
132. Attending research or statistics workshops	0 1 2 3 4 5 6 7 8 9 10
133. My desire to work as a faculty at a high research institution	0 1 2 3 4 5 6 7 8 9 10
134. Taking research and statistics classes before doctoral program	0 1 2 3 4 5 6 7 8 9 10
135. Succeeding in research courses	0 1 2 3 4 5 6 7 8 9 10
136. Program expectations to complete research	0 1 2 3 4 5 6 7 8 9 10
137. The sequencing of the research design classes in my plan of study	0 1 2 3 4 5 6 7 8 9 10
138. My year in the doctoral program	0 1 2 3 4 5 6 7 8 9 10
139. Membership in a research lab	0 1 2 3 4 5 6 7 8 9 10

APPENDIX G

FOCUS GROUP AGENDA

1. Welcome
2. Summarization of the first two rounds of data collection
3. Presentation of materials
    a. Dendrogram
    b. Point Map
    c. Cluster Map
4. Examination and labeling of clusters
5. Examination of regions
6. Discussion and sharing of impressions about research self-efficacy

APPENDIX H

PARTICIPANT DEMOGRAPHICS TABLES

Table 1

Demographics for Generation of the Statements Sample

Variable	*M*	*SD*	Range	*n*	%
Gender					
Female				9	64.3
Male				5	35.7
Age	30.6	9.06	23 - 59		
Ethnicity/ Race					
Black or African American				3	21.4
Asian				1	7.1
White or Caucasian				9	64.3
Other				1	7.1
Number of research and statistics courses or training completed before master's program					
0				1	7.1
1				1	7.1
2				6	42.9
3				1	7.1
4				4	28.6
5 and more				1	7.1
Number of research projects worked on before master's program					
0				5	35.7
1				3	21.4
2				3	21.4
4				2	14.3
5 and more				1	7.1
Number of publications before master's program					
0				13	92.9
1				1	7.1
Number of conference presentations before master's program					
0				11	78.6
2				2	14.3

5 and more	1	7.1
Master's in a CACREP-accredited program		
Yes	13	92.9
No	1	7.1
Master's program concentration		
Clinical Mental Health Counseling	12	85.7
Rehabilitation Counseling	1	7.1
Counseling Psychology	1	7.1
Number of research and statistics courses or training completed in master's program		
1	8	57.1
2	4	28.6
3	1	7.1
4	1	7.1
Number of research projects worked on in master's program		
0	2	14.3
1	7	50.0
2	1	7.1
3	1	7.1
5 and more	3	21.4
Number of conference presentations in master's program		
0	5	35.7
1	2	14.3
2	3	21.4
3	1	7.1
5 and more	3	21.4
Number of semesters completed in doctoral program		
1	3	21.4
2	2	14.3
3	4	28.6
4	2	14.3
6	1	7.1
7	1	7.1
10+	1	7.1
Number of research and statistics courses or training completed during doctoral program		
0	2	14.3
1	2	14.3

2	2	14.3
3	4	28.6
5 and more	4	28.6
Number of research projects worked on during doctoral program		
1	3	21.4
2	1	7.1
3	2	14.3
4	2	14.3
5 and more	6	42.9
Number of publications during doctoral program		
0	10	71.4
1	1	7.1
2	1	7.1
3	1	7.1
4	1	7.1
Number of conference presentations during doctoral program		
0	3	21.4
1	2	14.3
2	1	7.1
3	3	21.4
5 to 10	2	14.3
10 and more	3	21.4
Career aspirations		
Tenure track faculty position	10	71.4
Non-tenure track faculty position	1	7.1
Adjunct faculty position	3	21.4
Counselor position	7	50
Administrative position	2	14.3
Completed COMPs		
Yes	4	28.6
No	10	71.4
Defended dissertation proposal		
Yes	1	7.1
No	13	92.9
Defended dissertation		
No	14	100
Familiarity with the research self-efficacy (RSE) concept		
Not familiar at all	4	28.6

Slightly familiar	9	64.3
Very familiar	1	7.1

Note: $n = 14$

Table 2

Demographics for Sorting and Rating Sample

Variable	*M*	*SD*	Range	*n*	%
Gender					
Female				12	75.0
Male				4	25.0
Age	32.5	9.38	23 - 59		
Ethnicity/ Race					
Black or African American				2	14.3
White or Caucasian				10	62.5
Middle Eastern				1	6.3
Black and White				1	6.3
White and Hispanic				1	6.3
Other				1	6.3
Number of research and statistics courses or training completed before master's program					
0				1	6.3
1				1	6.3
2				9	56.3
3				1	6.3
4				3	18.8
5 and more				1	6.3
Number of research projects worked on before master's program					
0				5	31.3
1				6	37.5
2				2	12.5
3				1	6.3
4				1	6.3
5 and more				1	6.3
Number of publications before master's program					
0				15	93.8
1				1	7.1

Number of conference presentations before master's program		
0	12	75
1	2	12.5
2	1	6.3
5 and more	1	6.3
Master's in a CACREP-accredited program		
Yes	12	75
No	4	25
Master's program concentration		
Clinical Mental Health Counseling	11	68.8
School Counseling	1	6.3
Marriage, Couples and Family Counseling	1	6.3
Community Counseling	1	6.3
Counseling Psychology	2	12.5
Number of research and statistics courses or training completed in master's program		
1	10	62.5
2	3	18.8
3	2	12.5
4	1	6.3
Number of research projects worked on in master's program		
0	3	18.8
1	6	37.5
2	4	25.0
3	1	6.3
5 and more	2	12.5
Number of conference presentations in master's program		
0	7	43.8
1	3	18.8
2	1	6.3
3	2	12.5
4	1	6.3
5 and more	2	12.5
Number of semesters completed in doctoral program		
1	1	6.3
3	4	25.0
4	3	18.8
6	1	6.3

7	3	18.8
8	2	12.5
9	1	6.3
Currently registered in the first semester	1	6.3
Number of research and statistics courses or training completed during doctoral program		
0	2	12.5
2	1	6.3
3	5	31.3
4	2	12.5
5 and more	6	37.5
Number of research projects worked on during doctoral program		
0	1	6.3
1	1	6.3
2	1	6.3
3	4	25
4	1	6.3
5 and more	8	50
Number of publications during doctoral program		
0	7	43.8
1	2	12.5
2	2	12.5
3	2	12.5
4	1	6.3
5 and more	2	12.5
Number of conference presentations during doctoral program		
0	2	12.5
1	1	6.3
2	1	6.3
3	3	18.8
4	1	6.3
5 to 10	3	18.8
10 and more	5	31.3
Career aspirations		
Tenure track faculty position	10	62.5
Non-tenure track faculty position	2	12.5
Adjunct faculty position	7	43.8
Counselor position	10	62.5
Administrative position	5	31.3

Completed COMPs		
Yes	7	43.8
No	9	56.3
Defended dissertation proposal		
Yes	1	6.3
No	15	93.8
Defended dissertation		
No	16	100
Familiarity with the research self-efficacy (RSE) concept		
Not familiar at all	7	43.8
Slightly familiar	4	25
Moderately familiar	4	25
Very familiar	1	6.3

Note: $n = 16$

Table 3

Demographics for Interpretation of the Maps Sample

Variable	*M*	*SD*	Range	*n*	%
Gender					
Female				5	100.0
Age	32.4	4.77	26 - 38		
Ethnicity/ Race					
Black or African American				1	20.0
White or Caucasian				3	60.0
Other				1	20.0
Number of research and statistics courses or training completed before master's program					
0				2	40.0
2				2	40.0
3				1	20.0
Number of research projects worked on before master's program					
0				2	40.0
1				3	60.0
Number of publications before master's program					
0				5	100.0

Number of conference presentations before master's program			
	0	5	100.0
Master's in a CACREP-accredited program			
	Yes	4	80.0
	No	1	20.0
Master's program concentration			
	Clinical Mental Health Counseling	4	80.0
	Transcultural Counseling	1	20.0
Number of research and statistics courses or training completed in master's program			
	1	3	60.0
	2	2	40.0
Number of research projects worked on in master's program			
	1	4	80.0
	2	1	20.0
Number of conference presentations in master's program			
	0	1	20.0
	1	2	40.0
	2	1	20.0
	3	1	20.0
Number of semesters completed in doctoral program			
	3	1	20.0
	6	1	20.0
	7	2	40.0
	Currently registered in the first semester	1	20.0
Number of research and statistics courses or training completed during doctoral program			
	0	1	20.0
	3	1	20.0
	5 and more	3	60.0
Number of research projects worked on during doctoral program			
	0	1	20
	3	1	20
	4	1	20
	5 and more	2	40
Number of publications during doctoral program			
	0	2	40.0
	1	1	20.0
	2	1	20.0

	4	1	20.0
Number of conference presentations during doctoral program			
	3	1	20.0
	5 to 10	3	60.0
	10 and more	1	20.0
Career aspirations			
	Tenure track faculty position	4	80.0
	Adjunct faculty position	2	40.0
	Counselor position	4	80.0
	Administrative position	2	40.0
Completed COMPs			
	Yes	3	60.0
	No	2	40.0
Defended dissertation proposal			
	Yes	1	20.0
	No	4	80.0
Defended dissertation			
	No	5	100.0
Familiarity with the research self-efficacy (RSE) concept			
	Not familiar at all	1	20.0
	Slightly familiar	3	60.0
	Moderately familiar	1	20.0

Note: $n = 5$

APPENDIX I

FINAL CLUSTER LIST

Clusters	Statements
Cluster 1: Conceptualization of Research (Skills)	46. Selecting the appropriate analyses for a research project 16. Choosing an appropriate research design that will answer a set of research questions and/or test a set of hypotheses 18. Determining the universe, population, and appropriate sample for a given study 5. Relating specific questions of interest to the underlying theory 19. Selecting methods of data collection appropriate to the study population and variable(s) of interest 4. Placing my study in the context of existing research and justify how it contributes to important questions in the area 11. Describing appropriate recruitment and retention methods used in research 20. Evaluating and selecting reliable and valid instruments to measure or assess variables 21. Stating the relationship between the chosen research design, the type of data collected, and the necessary statistical techniques 1. Selecting a suitable topic area for my study 15. Comparing major types of studies (e.g., case reports, case controls, cross-sectional, longitudinal and epidemiological studies, clinical trials) 43. Knowing which statistics to use 14. Being knowledgeable and respectful of diverse ethical challenges associated with conducting research with minority populations 2. Refining a problem so it can be investigated 10. Explaining the historical events that had significant impact on the federal regulations for the protection of human subjects 13. Describing and discussing ethical issues involved in conducting research 89. In my research training, focusing on understanding the logic of research design and not just statistics
Cluster 2: Application of Research (Skills)	24. Explaining the outcome of given analysis in terms of the originally stated hypotheses or research questions

	42. Designing visual presentations (posters, slides, graphs, pictures) 12. Writing a human subjects consent form containing the appropriate elements 39. Writing the results section of a research paper that clearly summarizes and describes the results, free of interpretative comments 40. Writing a discussion section for a research paper that articulates the importance of my findings relative to other studies in the field 3. Organizing my research ideas in writing 22. Analyzing data according to their level of measurement and the research design 45. Using statistical packages (e.g., SPSS-X, SAS) 47. Interpreting computer printouts of my analyses 44. Controlling for threats to validity 29. Organizing data to store and analyze in a computer system 17. Designing a study using quantitative methods (e.g., experimental, quasi-experimental designs, clinical trials) 31. Preparing a research proposal suitable for submission in my research area 48. Using various technological advances effectively in carrying out research (e.g., the internet) 36. Integrating the research findings into the existing literature by discussing what is known, unknown, and what requires further study 38. Writing a literature review that critically synthesizes the literature relevant to my own research question
Cluster 3: Management/Administrative/ Logistical Aspects of Research (Skills)	37. Selecting a journal for a manuscript submission 28. Maintaining a log of my research process (e.g., experiments conducted, major decisions, analyses performed) 35. Obtaining or purchasing appropriate supplies and equipment for my research study 32. Locating appropriate forms for a grant application 34. Obtaining necessary signature for institutional approval of a grant application 23. Providing direction to computer specialists or statisticians on how to handle missing data 25. Recruiting and screening research project staff 33. Establishing collaborator and consultant agreements for a grant application

	41. Describing the stages of manuscript review 27. Asking staff to leave the project team when necessary 26. Training assistants to collect data 6. Consulting senior researchers for ideas 30. Speaking with a person at the funding agency regarding my project or project ideas
Cluster 4: Individual's Intentionality in Developing Research Competence	132. Attending research or statistics workshops 131. Mentorship prior to my doctoral studies 134. Taking research and statistics classes before doctoral program 135. Succeeding in research courses
Cluster 5: Research Activity and Outcome	122. Quantity of unpublished empirical manuscripts I have authored or coauthored 121. Number of published manuscripts (either empirical or otherwise) I have authored or coauthored in a refereed journal 123. Quantity of manuscripts I am currently in the process of preparing to submit for publication (i.e., writing the manuscript) 124. Quantity of projects I am currently conducting statistical analyses on data 120. Number of articles I have submitted to refereed journals
Cluster 6: Interest and Motivation for Conducting (Own) Research	101. Being eager to have research activities as part of every work week 103. Being passionate about writing for publication/presentation 107. Being keen on presenting research findings at a conference 117. My desire to leave my mark on my field 118. My eagerness to receive awards for my scientific accomplishments 111. Being curious about learning about a new statistical procedure 106. Being interested in taking a statistics course 113. Being eager to develop new explanations of well accepted empirical studies 119. The fact that research in and of itself is enjoyable for me 114. Feeling satisfied when conducting research 102. Being passionate about analyzing data 100. Being passionate about designing a study 105. Being interested in conducting a literature review 116. My desire to avoid difficult research projects because I am concerned that I may fail 104. Being curious about developing funding proposals

	133. My desire to work as a faculty at a high research institution 139. Membership in a research lab
Cluster 7: Interest and Motivation for Research Leadership and Collaboration	87. Sensing that being on a research team can be intellectually stimulating 99. Being interested in leading a research team 9. Working interdependently in a research group 108. Being eager to supervise student's research projects 109. Being interested in reviewing journal articles 110. Being passionate about serving as an editor for a scientific journal
Cluster 8: Research Culture and Collaboration Among Peers	126. My perception of my peers (e.g., support, research activity, personalities, cohort dynamics) 129. Having a peer mentor 115. Earning the respect of my peers when conducting research 112. Being keen on brainstorming about possible research with peers 7. Initiating research collaborations with peers 125. Collaborating on research with other doctoral students within and across programs 8. Sustaining effective collaborations
Cluster 9: Program's Intentionality in Developing Research Competence	128. Having research related graduate assistantship assignment 80. Having opportunities to be a part of research teams in my program 91. Getting high quality training here in the use of statistics in applied research (e.g., counseling research) 94. During our coursework, receiving training on a wide range of research methodologies (e.g., field, laboratory, survey approaches) 86. Taking statistics courses that show me how statistics are actually used in counseling research 85. Taking statistics courses that are taught in a way that is sensitive to my level of development as researchers 137. The sequencing of the research design classes in my plan of study 75. Being acknowledged by my program for scholarly achievements 97. Being rarely taught to use research findings to inform my work with clients 88. Being enabled to see the relevance of research to clinical service in my program

Cluster 10: Program's Research Culture	83. Having anxiety provoking research experience prior to dissertation 130. Research emphasis in my institution 84. Getting the impression in my program that my research work has to be of great value in the field to be worth anything 90. Sensing that there is a general attitude in my program that there is one best way to do research 92. Having a training environment promoting the idea that although parts of research must be done alone, other parts may involve working closely with others 79. Being encouraged to get involved in some aspects of research early in my graduate training 82. Being in a program in which many different research styles (e.g., field, laboratory) are acceptable 136. Program expectations to complete research
Cluster 11: Faculty Perspectives, Activity, and Support on Research	81. Having faculty producing clinically relevant research 96. Feeling like my research ideas are squashed during the process of collaborating with faculty members, so that the finished project no longer resembles my original idea 98. Having faculty showing excitement about research and scholarly activities 93. Having faculty who seems interested in understanding and teaching how research can be related to counseling practice 76. My faculty's reinforcement for the scholarly achievements of only a few selected students
Cluster 12: Connection with and Separation from the Mentor	69. Learning from my mentor by watching them 72. Seeing things differently from my mentor 64. Feeling uncomfortable working with my mentor 67. Having productive meetings with my mentor 60. Feeling like my mentor does not like me very much 73. Having different interests from my mentor 95. Feeling like I need to choose a research topic of interest to my mentor at the expense of my own interests 77. Feeling like my mentor expects too much from me and my research projects 74. Having an intellectually stimulating relationship with my mentor
Cluster 13: Mentor's Active Encouragement and Support	66. Being invited to be a responsible collaborator in my mentor's work 68. My mentor's facilitation of my professional development through networking

	63. My mentor taking my ideas seriously 62. My mentor's encouragement for my accomplishments 61. My mentor's kindness when commenting about my work 70. My mentor's efforts to make program requirements as rewarding as possible 65. Being introduced to professional activities (e.g., conferences, submitting articles for journal publication) by my mentor 71. My mentor's availability when I need them
Cluster 14: Mentor's Perspectives About Mentee's Research Knowledge and Skillset	59. My mentor's views on my competence to select an appropriate approach to analyzing qualitative data 58. My mentor's views on my ability to keep records during a research project 55. My mentor's perception of my competence to formulate hypotheses 56. My mentor's perspectives on my skills to write the introduction and literature review for a research study 57. My mentor's views on my competence to defend a research study
Cluster 15: Mentor's Research Knowledge and Skillset	51. My mentor's ability to utilize resources for needed help 78. My mentor's understanding and acceptance of any piece of research will have its methodological problems 52. My mentor's ability to use statistical packages (e.g., SPSS–X, SAS) 49. My mentor's ability to write the introduction and discussion sections for a research paper for publication 54. My mentor's skills to design and conduct qualitative studies 50. My mentor's ability to write the method and results sections of a manuscript 53. My mentor's competence to understand computer printouts
Cluster 16: External Social Support (By Itself Cluster 1)	127.Having a support system outside of program (e.g., family, friends)
Cluster 17: Developmental Level (By Itself Cluster 2)	138. My year in the doctoral program

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Ph.D.	**Counselor Education and Supervision** (CACREP-Accredited)
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M.C.	**Clinical Mental Health Counseling** (CACREP-Accredited)
	Arizona State University, Tempe, AZ, Spring 2016
B.A.	**Psychological Counseling and Guidance**
	Ankara University, Ankara, Turkey, Spring 2012

PROFESSIONAL MEMBERSHIPS

American Counseling Association (ACA)	2015 – Present
Association for Assessment and Research in Counseling (AARC)	2019 – Present
Counselors for Social Justice (CSJ)	2019 – Present
Association for Counselor Education & Supervision (ACES)	2015 – Present
Southern Association for Counselor Education & Supervisions (SACES)	2016 – Present
Western Association for Counselor Education & Supervisions (WACES)	2014 – 2016
Chi Sigma Iota, Counseling Honor Society (CSI)	2016 – Present
National Center for Faculty Development and Diversity (NCFDD)	2016 – Present
Virginia Counselors Association (VCA)	2016 – Present
Association for Lesbian, Gay, Bisexual & Transgender Issues in Counseling	2017 – Present