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The Relationships Between Research Training Environment, Researcher Identity Formation Process, and Research Activity Among Counseling Doctoral Students

Heesook Lee Ms
University of New Orlleans, heesookl@hotmail.com

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The Relationships Between Research Training Environment, Researcher Identity Formation
Process, and Research Activity Among Counseling Doctoral Students

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by

Heesook Lee

B.A., Korea University, 1992
M.A., New Orleans Theological Seminary, 2002

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Abstract

Current literature claims that the graduate students' personal aspects not only influence research training outcomes, but they also serve as a mediator between students' research activity and research training environment. In previous studies, key predictors of scholarly/research productivity among counseling graduate students have been investigated (Brown, Lent, Ryan, & McPartland, 1996; Kahn, 2001; Kahn & Scott, 1997). However, only 17% of the variance in three factors—research self-efficacy, research interests, and number of years in a program—predicted student research activities directly and research training environment indirectly. Bandura's social cognitive theory was utilized as the conceptual framework for the study. Data was collected through SurveyMonkey™, an online source that surveyed 292 counseling doctoral students currently enrolled in 90 counseling doctoral programs across the United States. The findings from a factor analysis conducted in the present study indicated, the *RIFPQ-R* developed by the researcher was a reliable and valid instrument. Additionally, the findings showed that counseling doctoral students' researcher identity correlated significantly with students' research activity and research training environment; however, the correlations were weak. Finally, using two multiple regression analyses, students' research experiences before admission to program, number of credit hours completed in qualitative and quantitative research, number of years enrolled in their program, and weekly hours spent doing research predicted a small portion of variance in students' reported researcher identity and research activity.

Key Words: counselor education, research training, identity, environment, outcome

Chapter I

Introduction

Chapter one is divided into seven sections. In the first section, the background of the proposed study is described in relation to the research training experiences of counseling doctoral students. In the second section, the significance of the study is discussed. The third section presents the purpose of the study. The fourth section reviews Bandura's social cognitive theory, which provided the theoretical framework for the study. The research questions and hypotheses are presented in the fifth section. In the sixth section, the anticipated limitations and delimitations are discussed. Finally, all terms are defined in the seventh section.

Background

The advancement of counseling as an academic discipline relies on the production, availability, and utilization of new information generated by research. Such academic advancement requires establishing research capacity, the process by which individuals and institutions develop abilities individually or collectively, resulting in higher levels of skills and greater abilities to conduct useful research in a given discipline (Trostle, 1992). Trostle argued that institutions and programs that aim to build research capacity need to focus on identification of hindrances or obstacles to conducting research. Within the counseling field, it is imperative that counseling programs establish a strong research capacity to advance the counseling profession as an academic discipline. In line with this notion, Gelso (1979) addressed the importance of counseling graduate research training that would enhance doctoral students' research productivity. He stated that graduate research training in counseling plays a major role in enhancing research capacity. According to Gelso (2006), graduate research training experiences are likely to shape counseling doctoral students' attitudes and investments in

research. He also suggested that those students' attitudes and investments in research affect the extent to which they are involved in research activities throughout their careers.

One of the core aspects of graduate training in counselor education is research training, as proposed by the Council for Accredited Counseling and Related Educational Programs (CACREP, 2009). In addition, many state licensure boards have adopted the CACREP standards, with research training as an academic requirement for counseling licensure (Haight, 1992). Such requirements indicate that research is a core element in counseling graduate training. However, counselor educators have raised concerns about counseling doctoral research training (e.g., Gelso, 1979; Heppner & Anderson, 1985; Kopala & Others, 1996; O'Brien, 1995). Over the years, insufficient research training outcomes have been addressed, including low research productivity and lack of interest in counseling research among graduate counseling students (Betz, 1997; Gelso & Lent, 2000; Gelso, Mallinckrodt, & Judge, 1996; Hollingsworth & Fassinger, 2002). Unsatisfactory training outcomes have led numerous counselor educators to conduct rigorous studies on effective research training of graduate counseling students. Counselor educators have attempted to examine potential contributions to research training outcomes by searching for alternative research training strategies (e.g., Brown, Lent, Ryan, & McPartland, 1996; Lambie & Vaccaro, 2011; Phillips & Russell, 1994; Royalty, Gelso, Mallinckrodt, & Garrett, 1986). For example, Paradise and Dufrene (2010) suggested a research group model to enhance doctoral students' research training outcomes.

To address the critical issues of counseling graduate research training outcomes, Gelso (1979, 2006) argued that environmental issues in graduate research training should be considered. He asserted that the training environment is important in research training to enhance students' research outcomes. According to Gelso (2006), the problems in counseling research training are

related not only to the lack of systematic attention to the training environment, but also to the elements that are embedded in the training environment (e.g., faculty modeling) and are likely to influence counseling doctoral students' attitudes toward and investments in research. Research training and education should be addressed from both a systemic perspective at the program level and an element or ingredient perspective, such as statistics classes offering advanced data analyses or faculty modeling of research, which should be ingrained within the training environment. Considering the required breadth of research training in counseling doctoral programs, students' attitudes may be influenced by the research training environment, which can influence students' involvement in research activities throughout their professional careers.

Despite the theoretical importance of the research training environment, empirical studies have shown no direct effect of the training environment on research productivity among graduate counseling students (Kahn & Miller, 2000; Kahn & Scott, 1997). The results of studies have indicated that research training environments have not directly influenced or made direct contributions to student research outcomes, such as student research productivity or research interests (Bishop & Bieschke, 1998; Brown et al., 1996; Kahn & Gelso, 1997; Mallinckrodt & Gelso, 2002). Recommendations have been made that counselor educators should engage in more rigorous investigation of direct or indirect contributions to research training outcomes among counseling graduate students. Other studies have examined personal contributions as well as environmental contributions to research training outcomes, including research self-efficacy, career goals, personality types, and research interests (Bard, Bieschke, Herbert, & Eberz, 2000; Betz, 1997; Bieschke, 2006). The findings of the aforementioned studies supported the effects of research training environments on scholarly and research activities only indirectly, not directly.

Kahn (2001) consolidated previous research findings regarding possible predictors of student research activities by developing a model of research training. Using his model, Kahn explained that three factors—research self-efficacy, research interests, and number of years in a program—explained only 17% of the variance in student research activities and research training environments directly and indirectly, respectively. Despite such extensive efforts to explore predictors of student research activities, Kahn (2001) reported that 83% of the variance in student research activities has not been explained yet, leaving most direct predictors of student research environments and activities unexplored.

Additionally, many researchers have proposed and studied the relationship between identity and learning (e.g., Crossouard & Pryor, 2008; Hall & Burns, 2009; Harrison, 2008; Wenger, 1998). Researchers have argued that learning is transformative, especially for adults. Wenger (1998) argued that identity is formed through the learning process, as learners interact within their community of practice. In addition, Daley (2001) examined the effect of continuing professional education on adult learners' identities through the development of professional expertise by incorporating new knowledge and skills into their professional practice. According to Wegner (1998), identity is formed through practice and learning activities, which in turn play a major role in performance that is relevant to identity (e.g., Blustein, Devenis, & Kidney, 1989; Burke & Reitzes, 1981; Cast et al., 2003). Particularly, a recent empirical study provided strong empirical support for the association between medical students' identity as physician and their performance in medical-training (Brunstein & Gollwitzer, 1996). In their study, students performed significantly better on a test relevant to their identity (i.e., physician) after the training occurred than on a test irrelevant to their identity. Based on the influence of learning on students' identities, the present study will examine the relationship among counseling doctoral students'

identity as researchers, their research training environments, and student research activities as students interact within their doctoral training environment and counseling community.

Significance of the Study

A few studies have suggested that doctoral students' researcher identity is formed through doctoral research training and that researcher identity influences their research activities and performance (Benishek & Chessler, 2005; Crossouard & Pryor, 2008; Hall & Burns, 2009). No empirical studies, however, were found on researcher identity formation in graduate counseling training related to research environments and activities to which doctoral students are exposed. Additionally, no studies have attempted to empirically examine researchers' identity as a predictor of student research outcomes. The present study may contribute to the understanding of the predictors of student research activities, as proposed in Kahn's (2001) research productivity model. Additionally, the results of the present study could offer insights to counselor educators into the development of research training interventions that enhance counseling doctoral students' identity as researchers and improve their research training environments and research activities.

Purpose of Study

The main purpose of the present study was to examine the triadic relationships of counseling doctoral students' researcher identity formation process (RIFP), research training environment (RTE), and research activity (RA). The present study examined how counseling doctoral students' formation of identity as researchers relates to their research training environments and research activities. The mutual interactions between the research training environment, researcher identity, and research activity were tested using Pearson correlations.

Conceptual Framework: Social Cognitive Theory (SCT)

The conceptual framework for this study was constructed based on a tripartite approach adopted from Bandura's (1978, 1986) social cognitive theory (SCT), which consists of the interrelated building blocks of a person, environment, and behavior. When applied to the learning process, SCT implies that the elements of the person (or student), learning activities, performances, behaviors, and attributes combined with the environment are interacting mutually among those elements as determinants to one another. For example, students, environments, and students' learning behaviors (i.e., three elements) interact in a way that students' academic performance in class may influence the instructor's attitude toward students, which comprises the students' learning environment. In turn, the instructor's attitude may influence students' motivation and academic performance (see Figure 1).
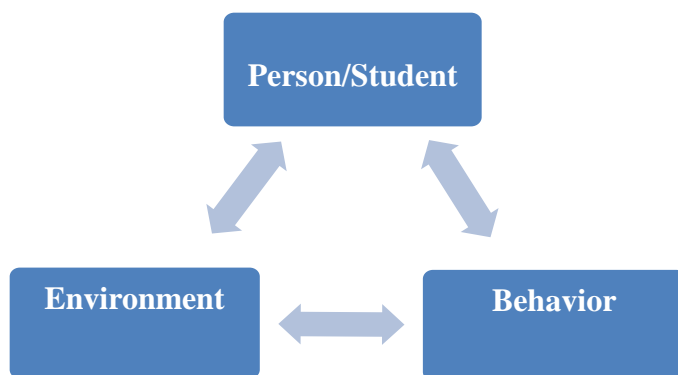
Figure 1. *Triadic reciprocal interactions among the student, environment, and behavior.*

Student-behavior. Students' psychological attributes and their research activities and performances involve bidirectional influences through their research training experiences (Bandura, 1986, 1989b). According to Bandura, psychological attributes include students' beliefs about their self-efficacy, expectations, and goals. Students' identities influence and shape their learning behaviors, activities, and performances. The *person or student* in Bandura's theory, as indicated in Figure 1, refers to a personal agency, such as students' self-efficacy and beliefs, which function as a set of proximal determinants of their motivations, emotions, and actions.

Personal agency is a part of personal factors, including students' biological, emotional, and cognitive aspects. Personal agency is a part of the personal factors that act as a proxy determinant of students' actions. In Bandura's (1989b) view, human beings are "neither autonomous agents nor simply mechanical conveyer of animating environmental influences. They make causal contributions to [their] own motivation and actions within a system of triadic reciprocal causation" (p. 1175). In the present study, researcher identity will be considered as the personal agency that functions as the proxy determinant of doctoral students' research activities (Vallacher & Wegner, 1989).

Environment-student. According to Bandura (1999), a person or student perceives and constructs reality through the dynamic cognitive processes of reciprocal feedback exchange between the student and the environment. The surrounding environment or social setting constantly provides feedback to students. Students respond to their environment through visible or invisible ongoing interactions. Students are viewed as both products and producers of their environment and social system. Likewise, a bidirectional interaction occurs between students' learning environments and their personal attributes, such as identity (Bandura, 1986, 1989b). In the interactional process within a given learning environment, the environment influences students by providing verbal or nonverbal feedback. In response to the feedback exchange along with the learning environment, students develop and modify their identities as they change their cognitions about their self-efficacy or researcher identity and their attitudes toward research. In turn, students evoke different reactions from their learning environment as a result of their personal attributes and physical characteristics; including age, gender, ethnicity, personality, self-efficacy, and attitude.

Environment-behavior. The production of effects on the triadic reciprocal interactions is inherent in Bandura's (1978, 1986) triadic reciprocal determinism. Specifically, the learning environment influences students while students influence their learning environment. Although students may have little control over the environment imposed on them, they do have room to maneuver in ways in which they subjectively construe and react to their environment. According to Bandura (1999), students' choices might potentially activate the environment. Through students' chosen actions, a certain part of the potential environment selectively becomes the actual experienced environment. For instance, during graduate studies, students with whom they want to associate in their graduate programs and what academic or clinical specialty areas they decide to pursue that will influence or shape their learning environment. In this sense, a graduate program or university may be experienced and perceived by students either positively or negatively, depending on students' choice of actions and the individuals with whom they choose to interact. Likewise, students can construe their own learning environment and institutional system by choosing their peers, activities, and milieus through intentional efforts. Hence, the actual experienced environment differs based on students' chosen actions, even though they are enrolled in the same program or university.

Research Questions and Hypotheses

The seven research questions included in the present study were as follows:

Research question 1. What are the psychometric properties of the *Researcher Identity Formation Process Questionnaire-Revised* (*RIFPQ-R*)?

Research hypothesis 1. The *RIFPQ-R* is a valid and reliable questionnaire.

Research question 2. Is there a significant relationship between counseling doctoral students' researcher identity formation process and their research training environment?

Research hypothesis 2. A significant relationship exists between counseling doctoral students' researcher identity formation process and their research training environment.

Research question 3. Is there a significant relationship between counseling doctoral students' researcher identity formation process and their research activity?

Researcher hypothesis 3. A significant relationship exists between counseling doctoral students' researcher identity formation process and their research activity.

Research question 4. Is there a significant relationship between counseling doctoral students' research activity formation process and their research training environment?

Research hypothesis 4. A significant correlation exists between counseling doctoral students' research training environment and their research activity.

Research question 5. How well do the eight auxiliary variables (i.e., number of years in program, total credit hours completed, number of credit hours in quantitative research completed, number of credit hours in qualitative research completed, number of current jobs, pre-research experience, satisfaction with overall research training, and weekly hours spent doing research) predict counseling doctoral students' researcher identity formation process?

Research hypothesis 5. The eight auxiliary variables (i.e., number of years in program, total credit hours completed, number of credit hours in quantitative research completed, number of credit hours in qualitative research completed, number of current jobs, pre-research experience, satisfaction with overall research training, and weekly hours spent doing research) predict counseling doctoral students' researcher identity formation process.

Research question 6. How well do the eight auxiliary variables (i.e., number of years in program, total credit hours completed, number of credit hours in quantitative research completed, number of credit hours in qualitative research completed, number of current jobs, pre-research

experience, satisfaction with overall research training, and weekly hours spent doing research) predict counseling doctoral students' research training environment?

Research hypothesis 6. The eight auxiliary variables (i.e., number of years in program, total credit hours completed, number of credit hours in quantitative research completed, number of credit hours in qualitative research completed, number of current jobs, pre-research experience, satisfaction with overall research training, and weekly hours spent doing research) predict counseling doctoral students' research training environment.

Research question 7. How well do the eight auxiliary variables (i.e., number of years in program, total credit hours completed, number of credit hours in quantitative research completed, number of credit hours in qualitative research completed, number of current jobs, pre-research experience, satisfaction with overall research training, and weekly hours spent doing research) predict counseling doctoral students' research activity?

Research hypothesis 7. The eight auxiliary variables (i.e., number of years in program, total credit hours completed, number of credit hours in quantitative research completed, number of credit hours in qualitative research completed, number of current jobs, pre-research experience, satisfaction with overall research training, and weekly hours spent doing research) predict counseling doctoral students' research activity.

Limitations and Delimitations of the Study

The present study was limited to three areas. First, the four instruments that were used in the present study relied on counseling doctoral students' self-reports. Constructs, such as perceptions of RTE and RA, reflected students' perspectives. Thus, such measurement issues as social desirability and acquiescence were involved in measuring the variables being studied. According to Crowne and Marlowe (1960), social desirability refers to the tendency of people to

respond to a survey question or a measurement in ways that they believe to be socially

acceptable or desirable. In addition, acquiescence referred to the tendency of people to agree

with a statement or a question rather than disagree when they are unsure or ambivalent about it

(Dicken, 1963; Diers, 1964). The second limitation was the use of the measure, *Researcher*

Identity Formation Process Questionnaire (RIFPQ), which was developed by the researcher in a

pilot study. Due to the small sample size in the pilot study, psychometric properties on the

validity of the *RIFPQ* were lacking statistical power to extend and generalize the results to

population. Further, additional psychometric properties were examined to examine the validity

and reliability of the revised instrument, *RIFPQ-R,* in the present study using a larger sample.

Finally, using four instruments may have caused the participants to drop out of the study or not

complete one or more of the instruments because of the number of questions included in the four

instruments.

Assumptions of the Study

The present study was based on four assumptions. Korsgaard (2009) proposed that

identity functions as an agent for human actions, and researcher identity is assumed as a personal

agent that evolves over time through a research training process. For the present study, it was

assumed that counseling doctoral students' researcher identity be a fluid process of identity

formation through interactions between the student, environment, and behavior. Second,

counseling doctoral students' researcher identity formation process occur through their

participation in research training activities. According to Wenger (1999), students develop and

reform their identities through learning. Within doctoral students' research training process,

researcher identity was formed through learning various researcher roles, including acquisition of

research knowledge and skills. Thus, participation in relevant training activities was essential for

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the establishment of researcher identity. The third assumption would be that the triadic reciprocal interactions among counseling doctoral students, their environments, and their behaviors determine the research activities in which they participate and the meanings that students construct internally from the activities associated with their researcher roles. Fourth, in accordance with SCT, the strengths of such interactional relationships differ depending on the characteristics of each of the three factors: student, environment and behavior.

Definitions of Terms

Behavior refers to human behaviors that are resultant behaviors or actions from the reciprocal interactions with both the individual's personal attributes and his or her social environment (Bandura, 1978, 1986). Individuals interact with their social environments by visible and invisible actions and behaviors, including selection of their peers, activities, and milieus through intentional efforts.

Commitment refers to the degree to which students' relationships to others within their research related social network depends on their engagement in research related activities (Stryker & Serpe, 1982).

Environment referred to a social environment by which the individual is surrounded and he or she perceives and constructs reality through the dynamic cognitive processes of reciprocal feedback exchange between the individual and the environment (Bandura, 1978, 1986).

Exploration was defined as students' active questioning and weighing of various identity alternatives in the field of counseling (Marcia, 1966).

Identity in a psychosocial perspective, Erikson (1959; 1968) defined identity as s sense of wholeness that is a sense of sameness and continuity over time and space in perceiving

oneself. Individuals act and interact with their social environments in ways to keep a sense of wholeness about them, which is consistent and congruent with their sense of identity.

Person referred to a personal agency including personal attributes, for example, students' self-efficacy beliefs, which function as a set of proximal determinants of their motivations, emotions, and actions. Personal agency is a part of the personal factors including students' biological, emotional and cognitive aspects.

Professional identity referred to a relatively stable and enduring constellation of attributes, beliefs, values, motives, and experiences in which members of a professional community define themselves in a professional role (Schein, 1978).

Reciprocal determinism was defined as human behavior that is determined through the triadic reciprocal interactions among the person, environment and behavior, which are codependent and mutually influential in determining each of the factors (Bandura, 1978, 1986).

Research activity was viewed as interchangeable with research (scholarly) productivity, which includes designing and conducting research, writing manuscripts of a theoretical nature or critical review of literature, developing program evaluations or needs assessments, presenting at professional conferences, participating as a member of a research team, and advising the research projects of others (Khan & Scott, 1997).

Research training environment referred to "all those forces in graduate training programs (and more broadly, the departments and universities within which the programs are situated) that reflect attitudes toward research and science" (Gelso, 1979, p. 470).

Salience referred to the likelihood that a specific identity will be activated across situations (Stryker & Serpe, 1982).

Social cognitive theory explained human behaviors as results of the triadic reciprocal interactions among the personal factor, environment and behavior (Bandura, 1978, 1986). The three elements in the reciprocal interactions are not independent or free from the other, but are codependent and mutually influential.

<center>**Chapter II**</center>

<center>**Literature Review**</center>

Introduction

Over the past 50 years, social and behavioral researchers have attempted to understand and explain human behaviors in a given social context (Côté & Levine, 2002; Ickes & Knowles, 1982). As a part of the efforts to explain human behaviors, immense attention has been paid to identity studies in academia. Numerous researchers have studied the relationships between identity and human behaviors in a given specific social context and environment (e.g., Beaumont & Zukanovic, 2005; Berman, Weems, & Stickle, 2006; Charng, Piliavin, & Callero, 1988; Stryker & Serpe, 1982). In this chapter, the literature review comprised three main parts. First, Bandura's social cognitive theory was presented with the theoretical foundations underlying the development of assessing researcher identity formation process. Second, general concepts and theoretical perspectives on identity development were summarized and a third review of various theories are presented of professional identity formation models in relation to counseling doctoral students.

Conceptual Framework: Social Cognitive Theory (SCT)

Bandura's (1978, 1986) social cognitive theory (SCT) consists of interrelated building blocks, which include the person, the environment, and the behavior. Bandura (1978, 1986) explained that human behavior is based on the generic psychological principle of the triadic reciprocal interactions among the person, environment, and his or her behaviors, also known as reciprocal determinism. He referred to the term *reciprocal* as the mutual interactions in dyadic relationships, such as the person-environment, person-behavior, and behavior-environment. Bandura also referred to *determinism* as the production of the effects of the triadic reciprocal

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interactions. The generic principle of reciprocal determinism does not imply that each

bidirectional interaction has the same strength in the triadic reciprocal interactions when

influencing or causing the interactions (Bandura, 1983, 1999). Rather, the strength of each

interaction may be different depending on the persons, the particular behaviors being examined,

and the specific situation or environment in which the behaviors occur. The persons or students

in Bandura's theory is referred to as personal agency; such as self-efficacy beliefs, functions as a

set of proximal determinants of human motivation, emotion, and action. Personal agency is a

part of the personal factors including biological, emotional, and cognitive aspects of people or

students; whereas personal agency is a part of the personal factors that act as a proxy determinant

of individuals' actions. In Bandura's (1989b) view, human beings are "neither autonomous

agents nor simply mechanical conveyer of animating environmental influences. They make

causal contributions to [their] own motivation and actions within a system of triadic reciprocal

causation" (p. 1175).

　　　When applied to the learning process, the generic principle of reciprocal determinism

implies that the elements of persons or students; the learning environment and the learning

activities and performances function as determinants influencing one another (Bandura, 1999).

For example, when considering the interactions among students and their environment and

learning behaviors (i.e., three elements) in class may influence the instructor's attitude toward

students, which comprises students' learning environments. In turn, the instructor's attitude may

influence students' motivation and academic performance. Students perceive and construct

reality through the dynamic cognitive processes of reciprocal feedback exchange between

students and their environments (Bandura, 1999). The surrounding environment or social setting

constantly provides feedback to students. Students respond to the environment through visible or

invisible ongoing interactions. Students are viewed as both products and producers of their

environments and social systems. Likewise, a bidirectional interaction occurs between students'

learning environment and students' personal attributes, such as identity (Bandura, 1986, 1989b).

In the interactional process within a given learning environment, the environment influences

students by giving verbal or nonverbal feedback. In response to the feedback exchange with the

learning environment, students' identities develop and modify as their cognitions change in

relation to their self-efficacy, competence and/or interests. In turn, students evoke different

reactions from their learning environments because of personal attributes and physical

characteristics; including age, gender, ethnicity, personality, self-efficacy, and attitude.

The production of effects on the triadic reciprocal interactions is inherent in Bandura's

(1978, 1986) triadic reciprocal determinism. Learning environments influence students while

students influence their learning environments. Although students may have little control over

the environment imposed on them, they do have room to subjectively construe and react to their

environment. According to Bandura (1999), students' choices may potentially activate the

environment. Through students' chosen actions, a certain part of the potential environment

selectively becomes the actual experienced environment. For instance, during graduate student

learning processes, students decide with whom they want to associate in their graduate programs

and what academic or clinical specialty areas they decide to pursue that will influence or shape

their learning environments. In this sense, students may experience and perceive a graduate

program or university positively or negatively, depending on students' choice of actions and the

individuals with whom they choose to interact. Likewise, students can construe their own

learning environments and institutional systems by choosing their peers, activities, and milieus

through intentional efforts. Hence, the actual experienced environment differs based on students' chosen actions, even though they are enrolled in the same program or university.

In understanding students' actions and behaviors, identity formation is particularly critical. Erikson (1959; 1968) proposed that individuals behave and respond to their social circumstances with an aim to achieve these individulas' developmental tasks. These tasks include identity formation that is genetically programmed in humans as other developmental tasks do. Identity formation is one of those psychosocial development tasks that adolescents strive to achieve. He defined identity as s sense of wholeness, that is, a sense of sameness and continuity in perceiving oneself over time and space. It implies that individuals act and interact with their social environments to keep a sense of wholeness about themselves, which is consistent and congruent with their sense of identity. Identity is a self-structure or self-constructed dynamic organization of drives, abilities, beliefs, and individual history and is developed through exploration of identity alternatives and commitment (Marcia, 1980).

Individuals define themselves in terms of goals, values, and beliefs in which the individual is unequivocally committed (Waterman, 1984).These commitments are made firm as "the chosen goals, values, and beliefs are judged worthy of giving a direction, purpose, and meaning to life" (p. 331). Likewise, identity is a driving force in life and helps navigate individuals' way in the world. The sense of identity enables individuals to recognize their own uniqueness and similarity to others and their own strengths and weakness when making their ways in their social circumstances (Erikson, 1968; Marcia, 1980). Individuals act in ways to maintain a sense of sameness and consistency with their self-structure or self-definition in terms of their values, beliefs, and goals. As personal attributes, such identities influence and shape

students' learning activities and performances in their given learning environments (Lave & Wenger, 1991; Wenger, 1998).

Numerous empirical studies in the field of counseling research training have been conducted to examine the relationships among the person, environment, and behavior when investigating the relations among doctoral students' personal attributes. For example, students' research self-efficacy and interests in research, their perceptions on the research training environment, and their research activities (e.g. Brown et al., 1996; Gelso, Mallinckrodt, & Judge, 1996; Lambie & Vaccaro, 2011; Phillips & Russell, 1994). For example, Bard, Bieschke, Herbert, and Eberz (2000) examined relationships among research self-efficacy beliefs, research outcome expectations, and elements of research training environments and these researchers explained differences in research outcome expectations and research self-efficacy between students and faculty from a social-cognitive perspective. From this perspective, Kahn and Scott (1997) investigated counseling doctoral students' research training experiences and found significant relationships among Holland's personality types, research self-efficacy and interest in research as personal attributes, perceptions of research training environment as an environment factor, and research activities and productivity. Likewise, numerous researchers have examined the relations between personal, environmental, and behavioral factors in the social cognitive approach (e.g., Brown et al., 1996; Gelso et al., 1996; Mallinckrodt & Gelso, 2002; Royalty et al., 1986).

Identity Development

The conceptualization of identity has differed across academic disciplines, such as psychology and sociology. The lack of conceptual clarity of identity consensus across disciplines has been a longstanding problem, making it difficult for researchers to communicate

with each other about the development of identity (Abdelal, Herrera, Johnston, & McDermott, 2006; Ickes & Knowles, 1982; Snyder, 1995), which applies particularly to researchers from sociology and psychology, as these disciplines have taken different approaches to their conceptualization of identity (Ickes & Knowles, 1982; Yardley, Honess, Yardley, & Honess, 1987). In sociology and psychology, identity theorists perceive, organize, and structure the social behaviors related to individuals' identity from different perspectives utilizing different theoretical sets of constructs and different levels of analysis (Côté & Levine, 2002).

In the psychological tradition, identity is about answering the question "Who am I?" within and across social contexts. Identity is conceptualized in terms of what happens inside the person. Identity theorists focus primarily on individuals' identity, emphasizing personal aspects and social interactions by attempting to answer the aforementioned question. Particularly in the psychosocial perspective, identity is referred to as a sense of sameness and continuity of the self over time and across various contexts (Erikson, 1968). The sameness and continuity indicate that a sense of stability and consistency are essential to establish a firm sense of identity. To achieve a firm identity, individuals need to view the self as the same person consistently across different situations. Meanwhile, the identity status that emerges during the identity process formation can change from a diffused identity status while working towards an achieved identity status (Marcia, 1966).

Marcia operationalized the process of identity formation according to four identity statuses extracted from the combinations of exploration and commitment. Recent studies on identity status change have indicated that identity formation in adolescence is characterized either by stability or by progressive change (Kroger, Martinussen, & Marcia, 2009; van Hoof, 1999; Waterman, 1999). Additionally, the findings suggested that for adolescents progressive

changes occur over time with commitments, rather than changes in commitments themselves (Klimstra, Hale III, Raaijmakers, Branje, & Meeus, 2010). In this study the result showed that levels of commitments remained stable throughout adolescence and indicated that identity commitments are increasingly better explored, while certainty about commitments is already high for girls in early adolescence, and increases for boys throughout adolescence. However, these findings do not necessarily indicate that identity status changes over time, but they suggested that adolescents move towards an achieved identity status. The results provide some support for Waterman's (1982, 1999) concept of progressive change.

In sociological tradition, identity theories focus on what happens inside societies (Côté & Levine, 2002). Identity theorists view identity from a contextual perspective of social structure and culture. The self is viewed as reflexive in that the self can be perceived as an object and can be categorized, classified, or labeled in unique ways in relation to other social categories or classifications. According to Cast (2003), identity refers to "a set of meanings applied to the self in a social role or situation, defining what it means to be who one is in that role or situation" (p. 43). An individual's identity consists of the perceptions and views that resulted from the reflexive activities of self-identification in terms of membership in particular roles (Stets & Burke, 2000b). Likewise, identity is viewed as forming one's identity through the cognitive processes of self-identification and verification. Individuals are considered viewing themselves in terms of meanings transmitted by a structured society (McCall & Simmons, 1966; Stryker & Serpe, 1982).

Identity theory also defines identity based on roles that form an individual's interconnected uniqueness within a group, which emphasizes the individuality and interrelatedness with other group members in counter roles (e.g., teacher-student, counselor-

client, or parent-child) or the interactional context (Stets & Burke, 2000b). Individuals form

their identities by making meanings of the self, which are associated with their social roles,

through social interactions particularly with individuals in different roles. Individuals are

negotiators rather than just passive recipients in the given social contexts when making and

verifying the meanings of the self (McCall & Simmons, 1966). They actively search out

meanings, choose the social contexts in which to live, and make the meanings of the self within

the chosen social contexts. Research findings suggested that in many cases, individuals are

likely to choose the contexts to verify their existing views of themselves by harnessing the power

of the context to maintain stability; thus, they actively negotiate their chosen contexts relevant to

their identities (Swann & Bosson, 2008; Swann, 1987, 2005).

Conceptualization of identity formation. Human development can be characterized in

terms of biological, psychological, and societal changes of individuals' lives. The development

process is characterized by sequential changes across the life span (Hoare, 2006), which can

influence an individual's identity (Kroger, 2007). Personal and social changes can evoke

movement in individuals' identity development throughout their entire lifespan. Biological and

psychological changes influence identity development as well as the social and contextual events,

which emphasize the social roles and the social contexts in which individuals' identity develops.

Individuals undergo different cycles of identity formation and reformation as the societal

demands and their social roles change throughout their lives. Identity formation is therefore

understood in two dimensions, content and process (Schwartz, Luyckx, & Vignoles, 2011).

Content of identity formation. As individuals transition from adolescence to adulthood,

parallel processes of physical and psychosocial changes occur. Psychosocial change is reflective

in the cognitive based content that is linked to one's identity formation, and such transition may

influence individuals' goals and values, as individuals realize what elements in their lives are more important and thereby, what they want to achieve. For example, individuals transitioning through adolescence explore their identity alternatives which include their goals, values, philosophical and socio-political ideas, as well as religion. Through such exploration, they commit to their choices. Further along in their identity formation, young adults tend to put more weight on intrinsic rather than extrinsic values in association with their work motivation (Cotton, Bynum, & Madhere, 1997). These young adults tend to consider the vocational context, through which they can express their values and beliefs that are embedded in the contents of their identity, as very important (Kroger, 2007). They strive not only for extrinsic financial satisfaction, but also for intrinsic satisfaction by attempting to satisfy their values and beliefs that are embedded within their identity through their work experiences. The cognitive based content, critical in defining one's identity in early adulthood, includes the domains of vocational, political, religious, interpersonal, sexual, and philosophical values. Across cultures and societies, these domains serve as the main foundation in individuals' identity formation or reformation (Kroger, 2007). Other domains that are likewise critical during psychosocial development in early adulthood include partnership and parenthood, the stages during which young adults make critical decisions about commitments.

Process of identity formation. In the process of forming, maintaining, and reforming identity across the life span, a sense of identity is a flexible, fluid, and an on-going process (Schwartz et al., 2011). Individuals can modify or reform their sense of identity based on various social interactions with others. For example, in the case of young adults who are discovering their new selves along with the evolution of their self-awareness through various different social interactions, they continually revise their previous identity structures. After

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searching for better identity alternatives in any given new social environment, along with forming new relationships and developing their careers, individuals reform their own identities and make new commitments in new psycho-social-developmental contexts (Kroger, 2007).

Identity forms over time through exploration and commitment as part of an ego development process (Erikson, 1968; Marcia, 1966). Once a choice among the identity alternatives is made through exploration, particularly during adolescence, a person's identity reaches closure. At this point, the person makes a transition to adulthood during which identity commitment is more consistent and stable. Likewise, such exploration of personal choices and commitment to their own choices from other potential identity alternatives are embedded in their identity formation process. However, the resolutions of identity defining issues, such as commitment to social roles, remain flexible enough to be modified, externally and internally, as new life experiences occur (Kroger, 2007). Thus, individuals undergo the cycles of identity formation and reformation as societal demands, and their social roles within society change during their life (Stephen, Fraser, & Marcia, 1992).

Social and contextual identity formation. The social and contextual approach to conceptualizing identity is based on the notion that social roles connect individuals and society. With an emphasis on social positions, relevant roles, and role performance; the formation of individuals' identity is associated with the meanings of their selves in their social roles in a given situation (McCall & Simmons, 1966). Individuals learn the meanings through mutual feedback exchanges or social interactions in specific social environments (Burke & Tully, 1977), with the focus on individual behaviors (Stets & Burke, 2000a). Specifically, numerous researchers have studied empirically role performance and behavior outcomes associated with social roles (e.g., Burke, & Tully, 1977; Burke & Hoelter, 1988; Drass, 1986; Stets & Burke, 1996).

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In sociology, role identity theory is rooted in symbolic interactionism (McCall & Simmons, 1966), which presumes that individuals hold multiple roles and identities and that individuals form identities through symbolic interactions with society when performing their social roles associated with particular situations. Roles are the most basic constructs of both social systems and personal systems (Gordon, 1976). In Gordon's personal development system, roles have value and interpretive aspects. The value aspect of roles links individuals and their culture. Through social roles, individuals adopt the normative custom or knowledge of culture to which they belong. In turn, this normative aspect of roles produces motivation for behavioral conduct and creates structure for social actions.

On the other hand, the interpretive aspect of roles determines much of the personal cognitions, attitudinal predispositions, memories, and plans (Gordon, 1976). Roles reflect social expectations associated with a given social position, so they are normative and anticipatory in nature (McCall & Simmons, 1966). The set of social expectations comprises the social roles associated with occupancy of a particular position. Social positions can be described in terms of "systematically related categories", such as when an individual is described as a wife or a student (McCall & Simmons, 1966, p. 64). Society identifies individuals in terms of their social positions. Expectations of individuals situated in a certain position are fulfilled by their actual role-performances, and these performances are appraised and judged by the self and others if their role performances are more or less appropriate to such a social position associated with a role.

Theoretical perspectives of identity formation. Developmental, social, and contextual perspectives suggest that individuals form and reform their identities through social interactions over their lifespan. The course of identity formation differs based on individuals' host cultures

or societies that provide the supports and sanctions for their choices of various life styles (Kroger, 2007). For example, ethnic identity development results from personal, social, and contextual interactions between individuals and their host society. The ethnic/racial identity development perspective shows distinctive differences in ethnic/racial identity development between African-Americans and Caucasians in the United States (Cross, Strauss, & Fhagen-Smith, 1999; Helms, 1997). The social contexts in which individuals are situated create great variances in their identity development. Their identity formation and reformation occur along their life cycle.

A life cycle is divided into socially relevant units, such as social age, and individuals are expected to have different responsibilities and rights in their societies based on their age (Neugarten & Neugarten, 1986). Individuals take actions and respond to their roles associated with their responsibilities and duties prescribed by their host societies and cultures. Based on their choice of actions and responses to their roles, individuals face different social expectations and options with different life styles (Neugarten & Neugarten, 1986). Depending on individuals' choices within their host societies or cultures, they may experience social supports or sanctions through the course of identity formation or reformation (Erikson, 1968). Likewise, individuals' personal decisions as well as their host societies and social environments play a crucial role in their identity development.

Erikson's **p***sychosocial identity process.* As an example of the psychosocial approach to identity formation, Erikson (1968) proposed that individuals face specific psychosocial developmental tasks associated with establishing and managing their sense of identity. Identity formation and reformation plays a critical role in human development. Identity changes across the life span, as individuals' social environments change (Erikson, 1959). According to Erikson's life cycle theory of psychosocial development (1959), humans are epigenetically

programmed to go through an eight-stage life cycle of human development along with biological

and psychosocial maturity and societal changes. Individuals' identities form and reform as their

psychosocial development takes place. Every stage in the life cycle is associated with specific

psychosocial development tasks and conflicts that individuals must resolve. Human

development includes historical aspects of one's experiences accumulated through the course of

one's life span (Erikson, 1959). Each succeeding developmental experience is influenced by the

preceding developmental experience. Human development cannot be understood separately

from one's previous developmental process. Each life stage is built on the resolutions of the

tasks from the preceding stages.

Infants, in the first stage of psychosocial development, develop the first component of a

healthy personality, that is, a sense of trust, which determines the basic attitudes toward self and

the world (Erikson, 1959). A basic attitude and sense of trust that develop in childhood is

integrated with one's personality later in adulthood. In the second stage, toddlers between the

ages 2 and 3 need to develop a sense of autonomy by gaining a sense of independence and a

sense of personal control over physical skills through toilet training. A successful resolution of

the conflicts in this stage leads to the feelings of autonomy while failure results in the feelings of

shame and doubt. Erikson (1959) emphasized that during this period; the emerging ego identity

develops further based on a sense of basic trust and the resolutions of these early childhood

stages of psychosocial development. The third stage is when 4 to 5 year old children develop a

sense of purpose and responsibilities. Children in this period of development establish a sense of

initiative to plan and undertake activities, which enable them to carry out their responsibilities

and accomplish their goals. The sense of initiative functions as a basis for a realistic sense of

ambition and purpose, and it is necessary for future identity development. It allows children to

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take initiatives and to establish sense of purpose for future adulthood, as described by the following statement: "I am what I can imagine I will be" (Erikson, 1959, p. 122). In the fourth stage of development, 6 to 11 year old children develop a sense of industry, that is, the ability to produce things and make things work well. During this period, children develop, persevere, and adjust to the inorganic laws of the world while learning various new skills and acquiring knowledge. They develop self-confidence through competence. Up to the fourth stage of development, the accomplishment of children's psychosocial development tasks depends on what has been done and happened to them in their environments (Erikson, 1959).

In the fifth stage of adolescence, successful accomplishment of psychosocial development depends more on what adolescents do than on the external environmental conditions. Adolescents, aged 12 to 18 years old, accomplish certain psychosocial developmental tasks to develop their identities. Adolescents go through struggles and negotiate between the self and the social environment through reciprocal interactions when striving to discover their own identities. Adolescents are actively adapting or passively adjusting to their environments. They begin to develop a strong affiliation and devotion to ideals, causes, and friends. Once adolescents successfully achieve a sense of identity, related issues, along with role confusion, become peripheral in their minds. The next developmental stage deals with intimacy issues. Erikson (1968) argued that only when adolescents resolve psychosocial developmental issues with identity confusion could their egos become functional enough to master their developmental issues and the stage specific tasks that they will face in the next stage of development. During adolescence, the sense of identity, which is the primary psychosocial developmental task of the preceding stage of development that occurs during young adulthood, is necessary to establish a sense of intimacy (1968). The identity process is not necessarily limited

to adolescence; rather, it can be formed and reformed in an on-going process over the life span (Erikson, 1968; Stephen, Fraser, & Marcia, 1992).

For young adults aged 18 to 35 years old, the developmental tasks in the sixth stage of psychosocial development involve pursuing companionship and love to build intimate relationship. They seek deep intimacy and significant relationships with marital partners and friends to settle down and start their own families. Once young adults establish a sense of intimacy, generativity comes to the center of their minds (Erikson, 1968). During the seventh stage, middle age (i.e., 35 to 65 years old); adults tend to focus more on work, family, and career. Adults in this stage have to accomplish a sense of generativity that is essential for guiding the next generation, which motivates adults to demonstrate altruistic concerns and creativity in younger generations. Adults tend to strive to combine their personalities and energies to produce and care for their own children and younger generation in general. Adults in the last and eighth stage, over 66 years of age, develop a sense of integrity that enables them to integrate their previous experiences with new experiences associated with big life transitions, such as retirement. A sense of integrity helps organize the transitions that individuals experience throughout their lives to help them find the meaning and order in their entire life cycle with consistency and congruency. Integrity is a source used to defend the dignity of their life styles against all physical and economic threats that occur later in life.

Berzonsky's social and cognitive identity process. The identity orientation processing model by Berzonsky (1989) was developed based on social and cognitive perspectives in association with four personality outcomes classified by Marcia's identity status paradigm. As did Erikson, Berzonsky's perspective places more emphasis on the importance of cognitive reasoning through social interactions and feedback rather than on social constructs and contexts

relevant to identity formation process. Berzonsky (1990, 2011) proposed and empirically

showed that cognitive process orientations operate at different levels consisting of three identity

processing styles associated with personal problem solving and decision making which are

relevant to individuals' identity formation. An informational identity processing style involves

effective self-discipline with a clear sense of commitment and direction. Individuals with an

identity processing style are self-reflective, skeptical, and interested in learning new things about

themselves. They tend to intentionally seek out, evaluate, and utilize information relevant to self.

They are flexible in accommodating self-views with constructive and corrective feedback. In

addition, they demonstrate cognitive complexity, problem-focused coping, vigilant decision-

making, open mindedness, personal effectiveness, and an achieved or moratorium identity status

(Berzonsky, 2011).

Berzonsky (2011) believed that a normative information processing style is associated

with the way in which individuals internalize and adhere to their goals, expectations, and

standards of significant others or referent groups in a relatively more automatic manner.

Individuals with a normative style hold a foreclosed identity status. They tend to show a limited

tolerance for uncertainty and a strong need for structure and closure by focusing on internalized

conventions, standards, and expectations. Their primary goal is to defend and preserve their

present self-views and identity structure. A diffuse-avoidant identity processing style is

characterized by procrastination and avoidance of dealing with identity conflicts and decisions as

long as possible. Situational demands and consequences are the primary determinants of their

behaviors or actions when they have to act or make choices. Where they are and who they are

determine their actions. A diffuse-avoidant identity processing style is characterized by an

external locus of control, limited self-control, weak commitments, self-handicapping attributions and behaviors, problem behaviors and a diffusion identity status (Berzonsky, 2011).

In their empirical study, Berzonsky and Neimeyer (1994) showed that a foreclosed identity status was associated with a normative approach to personal problem solving and decision making, whereas, identity diffusion was linked to avoidance of dealing with identity issues and conflicts. Individuals in self-exploratory identity statuses were found to employ an informational processing style. However, the study's results indicated that the strength of identity commitments moderated the relationships between identity status and identity processing orientation. In addition, the findings of the second empirical study showed that a self-definitional emphasis was associated with informational processing styles that emphasized individuals' private self-elements; whereas, normative styles highlighted collective self-content and diffused-avoidant styles focused more on public self-components (Berzonsky, 1994). Additionally, another research finding showed that individuals with an information oriented identity style showed the highest level of self-esteem; whereas, those with a normative style had the most stable self-conceptions and those with a diffuse-avoidant style appeared to have the highest level of depressive symptomatology (Nurmi, Berzonsky, Tammi, & Kinney, 1997). In addition, dysfunctional cognitive and attributional strategies, including expecting to fail and engaging in task irrelevant behavior, displayed low self-esteem, unstable self-conceptions, and depressive symptomatology. Empirical studies suggest that these identity processing styles are associated with personal well-being and that the cognitive strategies that individuals deploy mediate the relationships between identity styles and well-being (Nurmi et al., 1997).

Social and contextual identity process. In a social and contextual approach to identity process, the self is viewed as an organization of multiple identities. Identity and the construct of

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the self are complex and multi-dimensional constructs (Burke & Reitzes, 1981; McCall & Simmons, 1966). The self, as a structure of role identities, is manifested through role identity enactment or role performance (Burke & Tully, 1977). Individuals with multiple role identities manifest self by activating their role identity or performing the role in the social environment. Individuals organize those multiple identities in a hierarchy, which determines specific role identity that is activated in a given specific situation. A role identity that is salient is the most likely to be acted out in a given social setting. Salience is referred to readiness or likelihood to act out a role in a given social environment. The likelihood that a role identity is activated is based on whether a person likes taking the role and whether it is important (Ervin & Stryker, 2001).

Salience hierarchy is associated with choices made in a role, which are related to the activities in a given situation, and reflects the self that is situated in the specific setting. In order for a role identity to be activated, individuals need to make a commitment to the roles and associated positions. Commitment is referred to as the interactional and affective ties to others in social networks, and identity salience refers to the likelihood that identities will get activated in various situations (Serpe & Stryker, 2011). Commitment also reflects the strength of individuals' connection to social networks, which can result from individuals occupying certain positions in the organized structures of the social relationships and the roles associated with those positions. Commitment influences identity salience while identity salience influences the role of behavior or performance individuals take.

One determinant of the salience hierarchy is the prominence of role identities. The activated role identity may imply the relative importance that individuals assign to specific role identity in a given specific situation compared to other role identities. The more prominent the

specific role identity is in a given specific situation, the more salient it is, and the more likely it is to be enacted. Other determinants of the salience hierarchy include need for support and the person's need or desire for the kinds and amounts of intrinsic and extrinsic gratification gained through performance as well as the perceived degree of opportunity for profitable enactment in the present social context (McCall & Simmons, 1966). As a result of a combination of the salience determinants, role identities are organized in their relative order of priority in a given situation, which determines the enactment of a specific role identity among multiple role identities (Callero, 1985; Charng, Piliavin, & Callero, 1988; McCall & Simmons, 1966; Stryker & Serpe, 1982). A particular identity is more likely to be activated compared to others in various social settings, which is in accordance with a salience hierarchy of multiple identities. Stryker and his associates (Serpe, 1987; Stryker & Serpe, 1987) empirically examined how individuals establish their identity as a function of commitment and salience and how commitment influences salience. Numerous studies supported their identity theory empirically (e.g., Hoelter, 1983; Serpe, 1987; Stryker, 1968; Stryker & Serpe, 1982).

Professional Identity Development

   Conceptualization of professional identity. Commonality in most professions includes a specialized body of knowledge that provides the distinctive skills necessary to practice the profession, a particular culture sustained by a professional association, an imperative to serve the public responsibly, an ethical code of conduct for professional practice, and an authority that represents exclusive expertise (Greenwood, 1957; Silva, 2000). Over time, through social interactions in a professional community, individuals gain various experiences, meaningful exchanges, and in-depth insight about their central and enduring preferences, talents, beliefs and values while establishing their professional identities (Schein, 1978). Schein defined

professional identity as a relatively stable and enduring constellation of attributes, beliefs, values,

motives, and experiences through which members of a professional community define

themselves in a professional role.

Professional identity development models. Identity formation highly depends on

cultural conditioning (i.e., social situation), which influences individuals' perceptions of selves

in their social environments (Erikson, 1968). Identity theorists, particularly those applying the

psychosocial approach, assume that individuals develop their identities through their social

participation when their personal traits and social environments interact with each other (Ickes &

Knowles, 1982). In addition, identity theorists emphasize the roles of society, individuals' intra-

psychic dynamics, as well as the biology processes of identity development and maintenance

(Erikson, 1968).

Neo-Eriksonian identity development models. Marcia's (1966) identity status construct

has been the most frequently used guiding model in operationalizing professional identity within

the Eriksonian approach (Kroger & Marcia, 2011; Skorikov & Vondracek, 2011). Marcia (1966)

first operationalized Erikson's work identity formation of adolescents. Marcia (1966)

constructed the identity status paradigm with two dimensions; exploration and commitment,

which were extracted from Erikson's work. Exploration involves an active search for various

identity alternatives, and a commitment is defined as making a relatively firm choice among the

alternatives (Marcia, 1966). Commitment refers to being committed to a chosen identity

alternative in various life domains including politics, occupation, religion, intimate relationships,

and values. Marcia derived four statuses; achievement, moratorium, foreclosure, and diffusion

from the combinations of the two dimensions of exploration and commitment. Each identity

status represents a combination of different levels of exploration and commitment. Both statuses,

achievement and foreclosure, are similar in terms of identity commitments but different in the degree to which individuals have explored their alternatives prior to making a commitment. Achievement is established by making commitments following a process of exploration; whereas, foreclosure is characterized by commitments enacted without prior extensive exploration. Both statuses, moratorium and diffusion, are similar because of the relative absence of commitment but different in terms of whether individuals engage in systematic identity exploration. Moratorium is characterized by exploring potential life choices and various identity alternatives; whereas, diffusion is characterized by engagement in little or no systematic identity exploration.

Marcia's identity status model has inspired numerous identity researchers, particularly neo-Eriksonians (Schwartz, 2001). He separated the measurement scores of each of the dimensions of exploration and commitment into two levels (low and high) by using the median score as the dividing score. He derived four statuses by combining each level of exploration with each level of commitment. The combination of high exploration and high commitment characterized achievement, high exploration and low commitment characterized moratorium, low exploration and high commitment characterized foreclosure, and low exploration and low commitment characterized diffusion. The literature on identity formation has validated his model (Waterman, 1988). However, Marcia's identity model does not reflect Erikson's emphasis on the effect of social contexts and his model was developed only for adolescents (Kroger, 2002). Later, based on Marcia's model for adolescents (1966); Luyckx, Goossens, Soenens, and Beyers (2006) proposed and empirically examined a model of identity formation in late adolescence. It comprises four structural dimensions; commitment making, identification with commitment, exploration in depth, and exploration in breadth.

Later researchers extended Marcia's four dimension model by adding one more

dimension of exploration, that is, ruminative (or maladaptive) exploration, which reflects

depression and anxiety that late adolescents display while exploring identity alternatives using

their curiosity and openness (Luyckx et al., 2008). Stephen, Fraser, and Marcia (1992) extended

the identity formation model across the life span and proposed that a sense of identity throughout

the entire adulthood is likely to be transformed through repeated phases of commitment and later

reassessment of the self, which is called a Moratorium--- (MAMA) cycle of identity change

process in adulthood.

Numerous neo-Eriksonian researchers who have studied professional identity (e.g.,

Dellas & Jernigan, 1987; Melgosa, 1987; Munson & Widmer, 1997) have applied Marcia's

model to operationalize professional identity formation. Achievement status in professional

identity development refers to a strong commitment to self-chosen career goals and values,

which are acquired through the exploration process of professional identity alternatives. In

contrast, foreclosure is characterized by commitments to specific professional roles or career

choices made without much professional or self-exploration. Moratorium represents an active

exploration and crisis when making a lasting career commitment. Diffusion refers to a status

characterized by absence of active exploration and an inability to make commitments, regardless

of whether individuals have already experienced a period of crisis. Likewise, neo-Eriksonian

models have been frequently implemented in research on professional identity (e.g., Goossens,

2001; Meeus, Deković, & Iedema, 1997; Skorikov & Vondracek, 1998). However, most of

those studies were conducted with adolescents and college students.

Integrated process oriented identity development models. Recently, neo-Eriksonians

and Marcia suggested the need to revise the original identity status paradigm that would be

applicable to adulthood which was found in the MAMA cycles, even after adults have made

identity commitments, they did not disengage from the exploration process (Stephen et al., 1992). Instead, they continued to update other possible choices and alternatives instead of keeping a stable, lasting commitment to their previous choice. According to Erikson (1963), individuals, who show a lack of interest and involvement in exploring identity alternatives and possible choices, experience identity diffusion and failure when attempting to establish a firm sense of identity. However, Skorikov and Vondracek (2007) pointed out that some individuals may have fully explored identity alternatives without making commitments. They argued that individuals' identity diffusion should be differentiated from identity confusion, which occurs when adults fail to form a secure sense of identity even after they have completed the exploration process. They proposed an expanded status paradigm of professional identity formed by six combinations of professional commitment and professional self-exploration.

According to Skorikov and Vondracek (2007), professional commitment is divided into two categories, commitment made and not made. Professional self-exploration is divided into three categories; limited, active, and completed. The combination of commitment not made and limited exploration characterizes professional identity diffusion. The combination of commitment not made and active exploration characterizes professional identity moratorium. The combination of commitment not made and completed exploration characterizes professional identity confusion. The combination of commitment made and limited exploration characterizes professional identity foreclosure. The combination of commitment made and active exploration characterizes dynamic professional identity achievement. Finally, the combination of commitment made and completed exploration characterizes static professional identity achievement.

In Skorikov and Vondracek's (2007) model, professional identity is formed through qualitative and quantitative changes in the structure and a form of identification with an individual role resulting from the interaction between the epigenetic unfolding of a person's capabilities and learning through self-chosen and socially assigned professional, educational, and leisure activities (Skorikov & Vondracek, 2007). However, as the researchers acknowledged later, their model still does not fully capture the professional identity formation process as a complex, evolving psychosocial dynamic entity of meanings in which individuals link their motivations and competencies with acceptable career roles. Particularly, individuals hold multiple identities relevant to family, work, religion, and other personal areas. Their model did not address the salience of a particular professional identity within a person's overall sense of identity. Vocational identity researchers recently addressed the need to consider identity salience among multiple identities when operationalizing professional identity formation and pointed out the lack of empirical studies that would investigate this issue (Brown, Kirpal, & Rauner, 2007; Jones & McEwen, 2000).

Professional Identity of Counselor Education Doctoral Students

   Graduate students' professional identity process. Development of an adult education perspective is conceived as an internal psychological process (Merriam & Clark, 2006) of a patterned sequential progression along a chronology of specific ages or life stages (Knowles, 1984). Daloz (1999) portrayed learning and growth as a progression of developmental transformation in learners' worldviews as a "Significant learning and growth [that] involve qualitative, developmental change in the way the world is viewed" (p. 149). Qualitative developmental change and personal transformation is essential in learning and training whether for children or for adults. As a part of developmental change and personal transformation,

learning changes individuals' definition of who they are and their perceptions of what they can do. Wenger (1998) depicted learning as "the vehicle for development and transformation of identities" (p. 13).

Students shape or reform their identities by engaging in practice through the learning process. Students transform their identities through practice and learning activities in the learning community. Through learning activities and professional practice, graduate students learn new selves and their new social environment as well as their new profession. Identity formation and transformation takes place as an integrated result of the personal and social aspects, and the collective environment (e.g., Burke & Kaplan, 1996; Erikson, 1968; J. Kroger et al., 2010; Stephen et al., 1992).

Counselor education doctoral students learn an abstract body of professional counseling knowledge in such areas of advanced supervision, skills, theories, teaching and research through their doctoral training (CACREP, 2009). Students also observe the behaviors, attitudes, and norms for social interaction prevalent among counseling practitioners including their colleagues, peers, faculty, supervisors, researchers and/or mentors in the counseling field (Colbeck, 2008). Doctoral students' observations are interpreted in light of their own prior experiences, their identity relevant future goals, and their current sense of who they are professionally and personally. Doctoral students will try on possible professional styles to see how well the styles fit with who they are as professionals (Ibarra, 1999). During their professional development process, students are establishing a sense of professional identity. Developing an identity as a professional scholar in counseling doctoral training is an essential task for doctoral students (Austin & McDaniels, 2006; CACREP, 2009).

Exploration in professional identity formation. Many counselor education students enter the doctoral level training programs with some degree of professional experiences and licenses. Their professional experiences may be in the counseling field or in a neighboring field such as education, psychology or community support workers. In the transition process from community professionals to doctoral students, it is necessary for doctoral students to maintain contact with the clinical piece of their professional identity as counselors (Johns, 1996). They need to maintain minimal clinical practice to validate their professional identities as counselors. Doctoral students gain understanding of the implications and dynamics within their professional transformations (Skovholt & Rønnestad, 1995; Wilkins, 1997). Particularly, doctoral students are likely to build various new relationships or ties to many types of individuals including peers, faculty, friends and business or administrative associates who may provide various types of support; such as friendships, advisors, mentors, or peers. Students will actively engage in the professional community, build social connections with other professionals and search for meaningful work experiences and practice within their doctoral training programs and communities.

Professional training in counselor education programs requires professional adaptation of doctoral students to new professional training environments and new roles associated with the counseling profession. With the change in professional and personal adaptation and transition that occurs for doctoral students at this time, provisional selves are temporary solutions that fill the gap between the realities of the self and the expected and imagined self (Ibarra,1999). Provisional selves allow doctoral students to experiment and examine all their future possibilities associated with their professional preferences, goals, purposes and values by evaluating their own competencies (Ibara, 1999). Students will develop possible identities of what they might

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become, what they would like to become, and what they are afraid of becoming, as a part of their professional identity formation process (Markus & Nurius, 1986). During doctoral students training, possible identities could include supervisor, researcher, counselor, lecturer, professor and administrator in relation to their past and current professional experiences.

Possible professional identities are formed through social interactions within the individual student's particular sociocultural and historical context and through the individual student's immediate social experiences (Markus & Nurius, 1986). In graduate professional training, provisional selves link students' current capacities and self-conceptions to the representations that they hold about what attitudes and behaviors are expected in their new and future professional roles. Provisional selves test students' potential and future possibilities and only become clarified with their experiences (Ibarra, 1999). Possible selves represent students' ideas about who they may become (Markus & Nurius, 1986). Also, possible identities are tested through experiences of provisional selves, and students make decisions on organizing those possible identities based on their self-assessments through social interactions. Provisional selves is conceptualized by "combining ideas about adaptation processes with ideas about identity construction to investigate how possible selves are created, tested, discarded, and revised in the course of career transition" (Ibarra, 1999, p.765).

However, Blustein and Phillips (1990) empirically examined that in career decision making, commitments were made without exploration for people who had an intuitive and dependent decision making style. The researchers described this group of people, who are in a situation of identity exploration, as persons who may prefer relatively rapid solutions to decisional tasks in order to reduce the anxiety of the uncommitted phase of identity formation. In counseling doctoral students' researcher identity formation, it takes a certain level of research

self-efficacy and research competence for students to be able to choose to be a researcher in the future career after graduation.   Learning to conduct research as a part of professional work is complex and multilayered, and research involves expert judgment to solve nonroutine problems (Abbott, 1988; Scott, 1981). Thus, it is essential for students to examine and evaluate themselves before they make decisions on their future career. In addition, some counseling doctoral students may enter their doctoral programs in a commitment phase of researcher identity formation process when they had enough opportunities to explore their professional alternatives and examine and evaluate themselves before admission to their doctoral programs.

Commitment and salience in professional identity formation. According to Ibarra (1999), doctoral students are required to accomplish three tasks in the professional transition to new professional roles; observe role models, experiment with provisional selves, and evaluate results according to internal standards and external feedback. In carrying out the three tasks, a repertoire of possible identities is modified and simultaneously influences performance of the tasks (Ibarra, 1999). Ibarra suggested that professional identities are formed through the process of experimenting with possible selves, which implies that doctoral students explore and test possible identities through graduate training experiences to see how well possible identities fit. They make decisions based on a sense of their particular professional identity to activate their chosen identity.

In the exploration process of professional development, students' intentionality is essential for successful professional transitions to being an academic professional and for effective decision making (Carlson, Portman, & Bartlett, 2006). As students effectively incorporate their intentionality into the self-management of professional preparation during doctoral training, they can make sound decisions to successfully equip themselves for academia.

Along with their intentionality, doctoral students explore and test their possible professional identities through a process of experimentation and evaluation. Also, they make a commitment to their professional identities along with their career plans and goals.

In empirical studies, engaging in vocational exploration and making vocational commitments leads not only to establishing a sense of vocational identity, but also to constructing one's identity in general from childhood through adulthood (e.g., Flum & Blustein, 2000; Kroger, 2007; Skorikov & Vondracek, 2007; Vondracek, Silbereisen, Reitzle, & Wiesner, 1999). In addition, Bosma and Gerlsma (2003) empirically found that in research an increasing number of types of identity development are described. Particularly, the diffuse and the foreclosed status, that is, not involving exploration, are conceived of as the more stable identity statuses, while people who are open to identity exploration could be involved in what Marcia and colleagues (Stephen et al., 1992) called MAMA cycles. A MAMA cycle consists of an alternation of exploration (Moratorium status) and strong commitments, chosen on the base of the exploration (Achieved status). Considering counseling doctoral students' openness to exploration, it is reasonable to assume that students' researcher identity formation may resemble the MAMA cycle that proceeds from an active exploration phase toward strong commitments on the basis of their explorations of possible identities and identity alternatives.

The concept of provisional selves and that of possible identities capture a variety of ways in which doctoral students make sense of and display who they are in the educational and professional contexts even though these concepts have not been operationalized to the extent of empirically assessing the constructs in a standardized way (Ibarra, 1999; Oyserman & James, 2011). As doctoral students explore various identity alternatives and evaluate their capabilities and competences as counselor educators in-training, they organize and prioritize multiple

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possible identities including supervisor, researcher, counselor, lecturer, professor and administrator based on the degree of commitment and the prominence of each of those identities. They organize those multiple identities and relevant roles in a salience hierarchy (McCall & Simmons, 1966). A salient professional identity is on the top of the hierarchy with multiple professional identities. The salient identity is more likely to be activated than other identities. It implies that identities positioned higher in the identity salience hierarchy are more strongly associated with their role-related behaviors. Even though students have the same role identities, they can behave differently in a given context of research training based on their identity salience hierarchy (Callero, 1985; Thoits, 2012). Thoits (2012) empirically examined a sense of meaningful, purposeful life that mediates the positive influences of role-identity salience on mental and physical health. Her research findings suggested that the more time spent in volunteer activities, the more important the volunteer identity. The more important a particular identity is to a person, the more he or she perceives that self matters to others, which in turn enhances purpose and meaning.

Empirical study findings suggested the potential importance of identity processes in motivating and sustaining volunteer work (Finkelstein, Penner, & Brannick, 2005; Penner & Finkelstein, 1998; Videka, 1979). The roles relevant to service performance or actions are embraced as an identity through performing service activities (Callero, 1985; Charng, Piliavin, & Callero, 1988; Piliavin & Callero 1991). Once the identity has been adopted, a desire to gain role-identity validation from others in the surrounding environment prompts repeated performance of service behaviors over time (Finkelstein, et al. 2005; Grube & Piliavin 2000). The more important the volunteer identity is to the individual, the more frequently he or she enacts the role (Callero, 1985). Although meeting the expectations of others and gaining identity

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validation are certainly key motivators (McCall & Simmons 1978), engaging in purposeful, meaningful, goal-directed activities is likely to be rewarding and thus motivating, (Gottlieb & Gillespie 2008).

Summary

The theoretical framework for the present study was formed from an integrative view of identity developmental perspectives and social-contextual perspectives of identity. The first section included an introduction to terms and framing of the chapter. In the second section, the conceptualization of identity formation was discussed and the theoretical perspectives of identity formation were presented. In the third section, conceptualization of professional identity and professional identity development models were discussed with relevant literature reviews. In the fourth section, the professional identity development of counselor education doctoral students in relation to their identity process during graduate training.

Chapter III

Methodology

This chapter includes a description of the methodology used in the proposed study, which is divided into six sections. The first section includes the purpose of the study, and the second section includes the research questions and relevant hypotheses. In the third section, a pilot study conducted on two of the instruments is described in detail, including generating the item pool, sampling of participants, data collection, and data analysis procedures. In the fourth section, the initial validation of the researcher designed demographic instrument and the description of the additional instruments that were used in this study are provided. In the fifth section, the sampling and data procedures for the main study were described. Finally, in the sixth section, the plans for data analysis were presented.

Purpose of the Study

The purpose of this study was to examine the psychometric properties of the *Researcher Identity Formation Process Questionnaire-Revised* (*RIFPQ-R*) and to investigate the relationships among counseling doctoral students' researcher identity formation process (RIFP), research training environment (RTE), and research activity (RA). Additionally, significant relationships of participants' demographics variables with the main variables (i.e., researcher identity-formation process, research training environment, and research activity) were examined.

Pilot Study

The literature on identity theories across various disciplines was reviewed. According to Benishek and Chessler (2005), previous research studies addressed concerns and suggestions about possible influences of identity on research performance; however, no studies that

empirically examined the process of researcher identity formation among counseling doctoral students were found. Without a measurement instrument to assess counseling doctoral students' researcher identity formation, examination of the association of counseling doctoral students' researcher identity formation process with research training environment or research activity would not be possible. The researcher developed the *Researcher Identity Formation Process Questionnaire* (*RIFPQ*) to assess graduate counseling students' formation of researcher identity. In 2009, a pilot study was conducted to examine the validity and reliability of the *RIFPQ* with a sample of counseling doctoral students. The pilot study consisted of the following three phases: (1) *RIFPQ* development, (2) expert panel feedback, and (3) data collection results.

Phase 1: *RIFPQ* development. Based on previous research findings and relevant theories (e.g., Marcia, 1966; McCall & Simmons, 1966; Stryker & Serpe, 1982), a 34-item pool was generated to assess counseling doctoral students' formation of researcher identity in three dimensions (see Appendix A). The three dimensions included exploration, commitment, and salience. The first dimension, applying Marcia's (1996) definition of *exploration*, the process of identity formation as a researcher was defined as counseling students' active questioning and assessing professional identity alternatives in the field of counseling. Stryker and Serpe's (1982) definition of *commitment* was used to refer to the degree to which counseling students' relationships with others from their research related professional network depends on their engagement in research related activities and their abilities to conduct research during the formation of their identity as researchers. The third dimension, *salience*, was used to refer to the likelihood that counseling students' identity as a researcher would be activated across their professional settings and situations (Stryker & Serpe, 1982).

Once the *RIFPQ* was developed, general feedback was received on the structure and

concepts of the 34 items from peer doctoral students. Additionally, a demographic questionnaire

(i.e., *Background Information Questionnaire*, *BIQ*) was developed to collect participant

demographics and auxiliary variables which included: (1) ethnicity, (2) age, (3) CACREP

accreditation, (4) number of years in program, (5) number of credit hours taken in statistics, (6)

enrollment status, (7) number of part-time or full-time jobs currently holding, (8) weekly-based

research related activity hours, (9) previous research experiences, and (10) satisfaction with

current research training experiences.

Phase 2: Expert panel feedback. In accordance with the exploratory phase of

developing the *RIFPQ*, an expert panel was chosen for the second phase of the pilot study.

Experts were selected based on their areas of expertise under investigation (i.e., professional

identity in graduate research training), which included seven faculty members in the college of

education at the University of New Orleans. Experts were nationally recognized for their

leadership in higher education and had more than five years of experience as faculty members.

The experts were contacted by e-mail or personal interviews. They provided feedback and

suggestions on the draft of the *RIFPQ* and the *BIQ*.

Based on the expert panel feedback, for the *RIFPQ* no items were added to the initial 34

items; however, 17 items in the initial item pool were deleted due to lack of clarity.

Additionally, items were modified. For example, item 12 (i.e., "The professional organizations

that I have joined are very important to me regarding my research interests and activities.") was

reworded to, "I am joining professional organizations for my professional development including

my research skills." Items 6 and 10, examples of concepts were included in parenthesis to clarify

of each item. Based on the expert panel feedback and suggestions, the resulting number of items

was 17 (see Table 1).

Table 1

Pilot Study - Researcher Identity Formation Process Questionnaire (RIFPQ)
_____

Construct	Items
Exploration	1. I often think about my future career path associated with potential job opportunities in the field of counseling and research. 2. I often think about the potential internal rewards (e.g., self-achievement or meaningfulness) associated with my possible future research activities in the counseling field. 3. I often think about how my choice of becoming a counselor educator in relation to research activities will match with my life purposes. 4. I often talk with other people such as friends, peers, faculty or family about the research related career path that I want to take in the future. 5. I often think about the potential external rewards (e.g., promotion, money, favors, prestige or the necessities of life itself, etc.) associated with my possible future research activities in the counseling field.
Commitment	6. As part of my research related experiences, I know many people through extracurricular activities (e.g., web research discussion forum participation, stat workshop or professional organization activities). 7. I have regular schedules or consistent amount of weekly hours devoted for research related activities. 8. I have put a great deal of time, energy and resources to become the kind of researcher who I would like to be in the future. 9. I would feel very resentful if I lost contact with those people known through my research related activities when I choose not to do research in my future career. 10. I know many researchers on a first name basis through my regular/extracurricular research related activities (e.g., coursework, research projects, online discussion forum, or any professional organization). 11. The population studied in the areas of my research interests is very important to me. 12. The professional organizations that I have joined are very important to me regarding my research interests and activities.
Salience	13. I am on the right track in terms of becoming the kind of researcher who I would like to be in the future. 14. At a meeting with new people for the first time at an annual counseling conference, if I have to tell them only ONE thing about myself, I choose to tell them about my current research activity or research interests rather than other topics such as my clinical experiences or personal life. 15. I greatly enjoy doing research or any research related activities. 16. My research related activities and the relevant outcomes greatly impact my self-esteem. 17. Others view me positively in terms of reaching the kind of researcher I would like to be in the future.

RIFPQ scoring and interpretation. The 17 items included in the *RIFPQ* were positively worded, with choices based on an underlying continuum of the extent of fitness to each item statement from *Least Like Me* to *Most Like Me*. Responses were measured on a 5-point Likert scale; 1 (*Least Like Me*), 2 (*Slightly Like Me*), 3 (*Moderately Like Me*), 4 (*Very Like Me*), and 5 (*Most Like Me*). According to Benishek and Chessler (2005), Likert scales have been used extensively to measure attitudes and opinions about various personal phenomena as well as to rate human performance and ability.

The scoring used on the *RIFPQ* is for each sub-scale score for each construct and combining of the sub-scores for an overall score using standardized z-scores by the American Educational Research Association, American Psychological Association, and the National Council for Measurement in Education (1999) that represent the overall effectiveness of doctoral students' performance in terms of researcher identity formation process. In addition, the Standard 1.12 of the Standards for Educational and Psychological Testing (1999) requires that if a test provides more than one score, the distinctiveness of the separate scores should be demonstrated. Recent empirical studies have supported that sub-scores obtained from each construct add value to a total score when sub-scores are reliable and valid (e.g., Haberman & Sinharay, 2010; Lyren, 2009; Sinharay, Haberman, & Wainer, 2011). Thus, a total score of the *RIFPQ* and sub-scores from the three constructs of exploration, commitment, and salience were scored and reported.

The 17 items total score ranged from a minimum of 17 to 35. The 17 items were summed for each of the three constructs based on the item numbers of each construct. The construct of exploration contained five items, commitment contained seven items, and salience contained five items. The total sub-score for the construct of exploration measured ranged from

a minimum score of 5 to a maximum of score of 25. The total sub-score for the construct of

commitment ranged from 7 to 35. The total sub-score for the construct of salience ranged from 5

to 25. No items were reversed-scored. The lower the score on each construct, the lower the

extent of the construct measured. For example, a score of 5 on exploration indicates that a

student engaged in the lowest level of exploration in search of various researcher identity

alternatives. The scores of the three constructs, exploration, commitment and salience, were

standardized to z-scores, and these three z-scores were transformed into a single z composite

variable for an overall total score to provide more stable measures of the underlying constructs

by combining them and dividing them by three (Ackerman & Cianciolo, 2000).

   Phase 3: Data collection results. After the University of New Orleans Internal Review

Board approved the pilot study (see Appendix B), an online data collection was conducted using

Survey Monkey™, which included the informed consent and the two instruments (*BIQ* and

RIFPQ). Participants were 50 counseling doctoral students enrolled in CACREP-accredited and

non-CACREP accredited counseling programs in the southern part of the United States (i.e.,

Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina,

Tennessee, and Texas). Invitation e-mails were sent to program coordinators or directors using

the contact information attained from the *Counselor Preparation; Program, Faculty, & Trends*

(Clawson, Collins, Henderson, & Hollis, 2008). Coordinators or directors of the counseling

programs were requested to forward the invitation e-mail to their counseling doctoral students.

Of the 50 counseling doctoral students who responded, 45 provided complete responses.

   Reliability on the RIFPQ. Using PASW SPSS 17 (Leech, Barrett, & Morgan, 2005), the

data were analyzed to test the reliability of the *RIFPQ*. The reliability is the extent to which a

questionnaire, test, or any measurement procedure is stable or consistent over time or across

raters (Carmines & Zeller, 1979; John et al., 2000). The results of the pilot test indicated overall good internal consistency using a Cronbach alpha coefficient on the *RIFPQ* ($r = .92$). Similarly, the alpha for the exploration subscale was .90, which indicated good preliminary internal consistency reliability. In addition, the subscale of commitment had an alpha of .85 and the salience subscale had an alpha of .75. All three subscales had reasonable internal consistency. Using Leech et al.'s (2005) criteria, when a corrected item-total correlation falls below .40, an item is considered low. No items on the *RIFPQ* were eliminated or modified (see Table 2). All 17 items included in the *RIFPQ* had corrected item-total correlations of .40 or higher.

Table 2

Researcher Identity Formation Process Questionnaire (RIFPQ): *Reliability Coefficients* Items

	A	B
1. I often think about my future career path associated with potential job opportunities in the field of counseling and research.	.57	.92
2. I often think about the potential internal rewards (e.g., self-achievement or meaningfulness) associated with my possible future research activities in the counseling field.	.65	.92
3. I often think about how my choice of becoming a counselor educator in relation to research activities will match with my life purposes.	.78	.91
4. I often talk with other people such as friends, peers, faculty or family about the research related career path that I want to take in the future.	.81	.91
5. I often think about the potential external rewards (e.g., promotion, money, favors, prestige or the necessities of life itself, etc.) associated with my possible future research activities in the counseling field.	.77	.91
6. As part of my research related experiences, I know many people through extracurricular activities.	.59	.92
7. I have regular schedules or consistent amount of weekly hours devoted for research related activities.	.51	.92
8. I have put a great deal of time, energy and resources to become the kind of researcher who I would like to be in the future.	.76	.91
9. I would feel very resentful if I lost contact with those people known through my research related activities when I choose not to do research in my future career.	.51	.92
10. I know many researchers on a first name basis through my regular/extracurricular research related activities (e.g., coursework, research projects, online discussion forum, or any professional organization).	.60	.92
11. The population studied in the areas of my research interests is very important to me.	.40	.92
12. The professional organizations that I have joined are very important to me regarding my research interests and activities.	.73	.92
13. I am on the right track to become the kind of researcher who I'd like to be in the future.	.73	.92
14. At a meeting with new people for the first time at an annual counseling conference, if I have to tell them only ONE thing about myself, I choose to tell them about my current research activity or research interests rather than other topics such as my clinical experiences or personal life.	.53	.92

	A	B
15. I greatly enjoy doing any research related activities.	.60	.92
16. My research related activities and the relevant outcomes greatly impact my self-esteem.	.46	.92
17. Others view me positively in terms of reaching toward the kind of researcher who I'd like to be in the future.	.50	.92

Note: A = Corrected item-total correlation, B = Cronbach's alpha if item deleted.

Participants were asked to provide suggestions and comments, including difficulties or issues experienced while completing the *RIFPQ* and *BIQ,* for further revisions. Based on the pilot study results, changes in the instruments deemed appropriate were made for the main study, including the feedback from the experts. For the *RIFPQ*, items 1 through 5 were modified by removing words from those five items that referred to "research" or "researcher" in order to fully reflect various identity alternatives without restricting students' exploration process to counseling research (e.g., Luyckx, Goossens, Soenens, Beyers, & Vansteenkiste, 2005; Marcia, 1966; Meeus, 2011). Eight items (i.e., 7, 9, 11, 12, 13, 14, 15, and 17) were modified. A word (i.e., *weekly)* in item 7 was deleted to clarify the content of the item. Items 9, 11, 12, and 15 were reworded to clarify the content of the item. The phrase *for free time* was added to item 15 to clarify the meaning of salience by indicating that students choose research related activities and enjoy doing research when they have free time (McCall & Simmons, 1966). In addition, items 13, 14, and 17 were intensified by adding words such as *very* or *definitely* to those items.

Based on the pilot study results, five items representing exploration were retained, seven items reflecting commitment were retained, and five items reflecting salience were retained from the original total number of 17 items. All three subscales were used to assess the formation of counseling doctoral students' identity as researcher. The revised and final version of the instrument, *RIFPQ-R,* is found in Appendix C.

Main Study

For the main study, three main variables were measured, (a) researcher identity formation process (RIFP), (b) research training environment (RTE), and (c) research activity (RA).

Research Questions and Hypotheses

Seven research questions were developed, which include the following:

Research question 1. What are the psychometric properties of the *Researcher Identity Formation Process Questionnaire-Revised (RIFPQ-R)*?

Research hypothesis 1. The psychometric properties will indicate that *RIFPQ-R* is a valid and reliable questionnaire.

Research question 2. Is there a significant relationship between counseling doctoral students' researcher identity formation process and their research training environment?

Research hypothesis 2. A significant relationship will emerge between formation of counseling doctoral students' identity as researchers and their research training environment.

Research question 3. Is there a significant relationship between counseling doctoral students' researcher identity formation process and their research activity?

Research hypothesis 3. A significant relationship will emerge between formation of counseling doctoral students' identity as researchers and their research activity.

Research question 4. Is there a significant relationship between counseling doctoral students' research activity and their research training environment?

Research hypothesis 4. A significant correlation will emerge between counseling doctoral students' research training environment and their research activity.

Research question 5. How well do the eight auxiliary variables (i.e., number of years in program, total credit hours completed, number of credit hours in quantitative research completed, number of credit hours in qualitative research completed, number of current jobs, pre-research

experience, satisfaction with overall research training, and weekly hours spent doing research) predict formation of counseling doctoral students' identity as researchers?

Research hypothesis 5. The eight auxiliary variables (i.e., number of years in program, total credit hours completed, number of credit hours in quantitative research completed, number of credit hours in qualitative research completed, number of current jobs, pre-research experience, satisfaction with overall research training, and weekly hours spent doing research) will predict formation of counseling doctoral students' identity as researchers.

Research question 6. How well do the eight auxiliary variables (i.e., number of years in program, total credit hours completed, number of credit hours in quantitative research completed, number of credit hours in qualitative research completed, number of current jobs, pre-research experience, satisfaction with overall research training, and weekly hours spent doing research) predict counseling doctoral students' research training environment?

Research hypothesis 6. The eight auxiliary variables (i.e., number of years in program, total credit hours completed, number of credit hours in quantitative research completed, number of credit hours in qualitative research completed, number of current jobs, pre-research experience, satisfaction with overall research training, and weekly hours spent doing research) will predict counseling doctoral students' research training environment.

Research question 7. How well do the eight auxiliary variables (i.e., number of years in program, total credit hours completed, number of credit hours in quantitative research completed, number of credit hours in qualitative research completed, number of current jobs, pre-research experience, satisfaction with overall research training, and weekly hours spent doing research) predict counseling doctoral students' research activity?

Research hypothesis 7. The eight auxiliary variables (i.e., number of years in program, total credit hours completed, number of credit hours in quantitative research completed, number of credit hours in qualitative research completed, number of current jobs, pre-research experience, satisfaction with overall research training, and weekly hours spent doing research) will predict counseling doctoral students' research activity.

Instruments

For the main study, four instruments were used to measure four main research variables: (1) *Researcher Identity Formation Process Questionnaire-Revised* (*RIFPQ-R*, see Appendix C), (2) *Research Training Environment Scale-Revised Short* (*RTES-RS,* see Appendix D), (3) *Scholarly Activity Scale* (*SAS,* see Appendix E), and (4) *Background Information Questionnaire-Revised* (*BIQ-R, s*ee Appendix F).

Researcher identity formation process questionnaire-revised (RIFPQ-R). The primary investigator developed the *RIFPQ-R* using the pilot study discussed earlier to assess one of the three main research variables (i.e., researcher identify formation process).

Research training environment scale-revised short form (RTES-RS). The *RTES-RS* was employed to assess how graduate counseling students perceive their research training environment (see Appendix D). Permission from the author was obtained to use the *RTES-RS* (see Appendix G). The *RTES-RS* is an 18-item short form of the longer 54-item version (Gelso et al., 1996; Kahn & Miller, 2000). It has been used to measure students' perceptions of their research training environment. As Gelso (1993, 1997) described, the 18 items reflect the following nine ideas of a research training environment: (1) modeling of appropriate scientific behavior, (2) reinforcing positive scholarly activities, (3) involving early, low levels of students' threatened feeling in research activities, (4) seeing science as a partly social experience, (5)

teaching relevant statistics and the logic of design, (6) teaching how to look inward for research ideas, (7) teaching that all experiments are inevitably flawed, (8) focusing on varied investigative styles, and (9) demonstrating how science is linked to clinical service. Two items measure each of the nine ideas on a Likert scale ranging from 1 (*Disagree*) to 5 (*Agree*). Sample items include, "I have felt encouraged during my training to find and follow my own scholarly interests," and "Our faculty seems interested in understanding and teaching how research can be related to counseling practice." A total score on the *RTES-RS* ranges from 18 to 90, with higher scores reflecting perceptions of a more positive research training environment.

Internal consistency of the *RTES-RS* was acceptable, as evidenced by coefficient alpha of .88, which was compatible with the original *RTES-R* (54 items, $r = .95$; Kahn & Miller, 2000). For a second study using the *RTES-RS*, alpha of .85 was reported, with the *RTES-RS* predicting scholarly activity among counseling graduate students (Kahn, 2001). Kahn and Miller (2000) reported that the 18 item *RTES-RS* correlated highly ($r = .96$) with the 54-item *RTES-R*, indicating that the *RTES-RS* explains 96% of the variance in the original *RTES*. Validity was examined by positive correlations among *RTES-RS* scores, measures of research self-efficacy, and interest in scientist activities (Kahn & Miller, 2000; Kahn, 2001).

Scholarly activity scale (SAS). The *SAS* was used to measure counseling doctoral students' current research activity (see Appendix E). Kahn and Scott (1997) developed the *SAS* to measure students' level of scholarly activity consisting of nine items that assess past accomplishments (e.g., number of manuscripts published) and current production of research (e.g., currently collecting the data for a research study). Kahn and Scott's scoring system of the *SAS* was implemented in a way that responses to all items were dichotomized to reduce problems with skewness. Thus, a score of 1 indicates that a student had some involvement in the particular

research activity (no matter how much), and a score of 0 indicates that a student had no experience in the scholarly or research activity. A total score on the *SAS* is created by summing the nine items, with higher scores reflecting greater activity (i.e., ranges from 0 to 9).

Kuder-Richardson (K-R) 20 for internal consistency of the *SAS* was .68 (Kahn & Scott, 1997) and .80 (Kahn, 2001). Additionally, validity was examined by assessing correlations between the measure for scholarly activity and interest in research, which was positive, $r^2 = .61$ and significant at .05 level, and science-relatedness of students' career goals, also positive $r^2 = .52$ and significant at .05 level (Kahn, 2001; Kahn & Miller, 2000; Kahn & Scott, 1997). Permission to use the *RTES-RS* and the *SAS* was obtained from the publisher, Dr. Jeffrey Kahn (see Appendix G).

Background information questionnaire–revised (BIQ-R). The *BIQ-R* consists of 16 demographic questions: (1) ethnicity, (2) gender, (3) age, (4) program accreditation, (5) cohort program, (6) future career goals at the time of admission to the program, (7) number of years in doctoral program, (8) number of credit hours completed in a doctoral program, (9) number of credit hours completed in qualitative research course work, (10) number of credit hours completed in quantitative research course work, (11) enrollment consistency as full-time doctoral student, (12) number of leave of absences taken in program, (13) number of current jobs, including part-time and full-time, (14) research experience before admission to doctoral program, (15) satisfaction with research training since in a doctoral program, and (16) number of hours spent in research related activities per week (see Appendix F).

Participants

An online survey method was utilized through SurveyMonkey™ to recruit counseling doctoral students. The first source for recruitment was an estimated potential participant

population of 2,500 counseling doctoral students currently enrolled in approximately 90

CACREP accredited or non-CACREP accredited counseling doctoral programs listed in the

"Counselor Preparation: Programs, Faculty, & Trends" (Clawson et al., 2008; Schweiger et al.,

2012). A second sampling source was the following four listservs: ASERVICL@list.acast.

nova.edu; COUNSGRADS@lists.acs.ohio-state.edu; DIVERSEGRADL@listserv.american.edu;

and CESNET-L@listserv.kent.edu.

Data Collection Procedures

For the main study, approval from UNO's Institutional Review Board (IRB) was received

(see Appendix H). After obtaining approval from the IRB, an invitation e-mail letter with an

informed consent included the online survey weblink to program coordinators or directors of

counseling doctoral programs across the United States using the contact information listed in the

"Counselor Preparation: Program, Faculty, & Trends" (Clawson et al., 2008; Schweiger et al.,

2012) and the four listservs. Coordinators or directors were requested to forward the invitation

e-mail to their counseling doctoral students. E-mail invitation letters were also be posted on the

four listservs. Participants who were willing to participate voluntarily in the online study were

instructed to click on the weblink included in the e-mail invitation that linked participants to the

online packet of documents. A reminder e-mail notice was sent every week for 3 weeks. After

the third week of the study, the completed dataset was downloaded via SurveyMonkey™ into an

Excel file. The sampling procedure was a convenient and purposeful method.

The informed consent document included the following: (a) purpose of the study, (b)

possible risks and benefits, (c) voluntary nature of participation, (d) confidentiality, and (e)

contact information of the researcher. Confidentiality was protected using an electric online

questionnaire packet, which was secured by a SSL encryption. Participation did not require

identifiable information of participants or their affiliated institutions. The online packet included the following: (a) informed consent form, (b) *Researcher Identity Formation Process Questionnaire-Revised*, *RIFPQ-R,* (c) *Research Training Environment Scale-Revised Short, RTES-RS* (Kahn & Miller, 2000), (d) *Scholarly Activity Scale, SAS* (Kahn & Scott, 1997), and (e) *Background Information Questionnaire-Revised, BIG-R.*

Research Questions and Data Analysis

To analyze the research questions, the data analysis procedures included Pearson correlations, regression, and factor analysis. The IBM SPSS Statistics 19.0 (formerly SPSS) software package was used to analyze the data.

Research question 1. What are the psychometric properties of the *Researcher Identity Formation Process Questionnaire-Revised* (*RIFPQ-R*)?

Data analysis. For the first research question, a factor analysis was conducted to examine validity and reliability of the *RIFPQ-R*.

Research question 2. Is there a significant relationship between formation of counseling doctoral students' identity as researchers and their research training environment?

Data analysis. A Pearson correlation coefficient was utilized to determine whether there was a significant relationship between formation of counseling doctoral students' identity as researchers (i.e., RIFPQ-R) and their research training environment (i.e., RTE).

Research question 3. Is there a significant relationship between formation of counseling students' identity as researchers and their research activity?

Data analysis. A Pearson correlation coefficient was used to determine whether there was a significant relationship between formation of counseling doctoral students' identity as researchers (i.e., RIFPQ-R) and their research activity (i.e., SAS).

Research question 4. Is there a significant relationship between counseling doctoral students' research activity and research training environment?

Data analysis. A Pearson correlation coefficient was utilized to determine whether there was a significant relationship between counseling doctoral students' research training environment (i.e. RTE) and their research activity (i.e., SAS).

Research question 5. How well do the eight auxiliary variables (i.e., number of years in program, total credit hours completed, number of credit hours in quantitative research completed, number of credit hours in qualitative research completed, number of current jobs, pre-research experience, satisfaction with overall research training, and weekly hours spent doing research) predict counseling doctoral students' research training environment?

Data analysis. A multiple regression analysis was utilized to determine how well the auxiliary variables predicted counseling doctoral students' research training environment.

Research question 6. How well do the auxiliary variables (i.e., number of years in program, total credit hours completed, number of credit hours in quantitative research completed, number of credit hours in qualitative research completed, number of current jobs, pre-research experience, satisfaction with overall research training, and weekly hours spent doing research) predict the formation of counseling doctoral students' identity as researchers?

Data analysis. A multiple regression analysis was utilized to determine how well the auxiliary variables predicted the formation of counseling doctoral students' identity as researcher.

Research question 7. How well do the eight auxiliary variables (i.e., number of years in program, total credit hours completed, number of credit hours in quantitative research completed, number of credit hours in qualitative research completed, number of current jobs, pre-research

experience, satisfaction with overall research training, and weekly hours spent doing research) predict counseling doctoral students' research activity?

Data analysis. A multiple regression analysis was utilized to determine how well auxiliary variables predicted counseling doctoral students' research activity.

Chapter IV

Results

The purpose of this study was to examine the relationships among research training environment, researcher identity formation process, and research activity. The main research variables were research training environment, researcher identity formation process, and research activity, which were measured using the following instruments: *Researcher Identity Formation Process Questionnaire-Revised* (*RIFPQ-R*), *Research Training Environment Scale-Revised Short (Form)* (*RTES-RS*), and *Scholarly Activity Scale* (*SAS*). IBM SPSS 19 was used to conduct the statistical data analyses.

The results of the present study are reported in four main sections. In the first section, the purpose of the study is reviewed. In the second section, the descriptive statistics on counseling doctoral students' demographic information are presented. The third section includes the scale measurements, descriptive statistics, and data analyses. In the fourth section, the research questions are explored and discussed along with the results. The last section includes the summary of the chapter.

Participant Demographics

Initially, 297 counseling doctoral student responded to the online consent form. Five cases were identified as outliers and removed from the dataset. When considering a sample size and the design of this study, which included a factor analysis, Kahn (2006) and Barrett and Kline (1981) was used as a source. Kahn (2006) recommended 300 as the minimum sample size to achieve sampling adequacy for a factor analysis; whereas, Barrett and Kline (1981) recommended a range of 50 and 400. As a result, 292 responses were included in the study, with a 98.6% completion rate of students who chose to participate.

Counseling doctoral students' demographic information was collected using the *BIQ-R*, which included the following 16 variables: 1) gender, 2) age, 3) ethnicity, 4) accreditation, 5) cohort, 6) career goal, 7) number of years in program, 8) total credit hours completed, 9) number of qualitative research credit hours completed, 10) number of research quantitative hours completed, 11) enrollment status, 12) leave of absence, 13) number of current jobs, 14) pre-research experience, 15) satisfaction with overall research training, and 16) weekly hours spent in research activity.

Counseling doctoral students' average age was 37 years old (*SD* = 9.7), with a range from 21 to 66. Most students were 31 to 40 years old (*n* =105, 36%), followed by 21 to 31 year old group (*n* = 79, 27.1%), 41 to 50 (*n* = 40, 13.7%), and 51 to 60 (*n* = 28, 9.6%) (see Table 3). Only three students were over 61 years old (*n* = 3, 1%). Thirty-seven (12.7%) students did not provide their age.

Table 3

Frequencies of Age, Gender, and Ethnicity (N = 292)

Demographic Variable	n	%	M	SD
Age			37.0	9.7
21-30 year	79	27.1		
31-40 year	105	36.0		
41-50 year	40	13.7		
51-60 year	28	9.6		
61 and older	3	1.0		
Missing	37	12.7		
Gender				
Male	60	21.5		
Female	205	70.2		
Missing	27	9.2		
Ethnicity				
Caucasian	191	65.4		
African American	39	13.4		
Hispanic/Latino	9	3.1		
Native American Indian	0	0		
Asian	8	2.1		
Multiracial	7	2.7		
Other	10	3.4		
	28	9.65		

Regarding gender, the number of female students was 205 (70.2%) and the number of

male students was 60 (21.5%). Twenty-seven students did not report their gender (9.2%).

Regarding ethnicity, the most prevalent ethnic group was Caucasian ($n = 191$, 65.4%), followed

by African American ($n = 39$, 13.4%), Other ($n = 10$, 3.4%), Hispanic/Latino ($n = 9$, 3.1%),

Asian ($n = 8$, 2.1%), and Multiracial ($n = 7$, 2.7%). Twenty-eight students did not report their

ethnicity (9.6%). None of the students were Native American Indians ($n = 0$, 0%)(see Table 3).

Regarding whether counseling doctoral students' doctoral program was accredited, 210

(71.9%), students reported that their programs are CACREP accredited and 41 (14.0%) reported

that their programs are not CACREP-accredited (see Table 4). Twenty-one (7.7%) students did

not report CACREP accreditation. Of the 41 students from the non-CACREP-accredited

program, nine students (3.1%) reported their programs are APA-accredited and two (0.7 %)

reported their programs are CORE-accredited. Twelve (4.1%) students reported their programs

were currently working on CACREP accreditation. Eighteen (6.1%) students reported they were

unsure about their program accreditations. For a program's accreditation, participants could

choose more than one choice, thus n does not equal 292.

Regarding whether counseling doctoral students' doctoral program was a cohort model,

167 (57.2%), students reported their programs were a cohort model and 95 (32.5%) reported that

their program was not a cohort model. Thirty (10.3%) students did not respond. When

examining doctoral students' priority of future career goals, 64 (21.9%) chose private

practitioner as the first priority, 39 (13.4%) chose clinical supervisor or administrator, 63 (21.6%)

chose a lecturer, 22 (7.5%) chose professional researcher, 63 (21.6%) chose scholar, and 17

(5.8%) indicated other. Twenty-four (8.2%) students did not respond.

Table 4

Frequencies of Program Accreditation, Cohort, and Priority of Future Career Goal (N = 292)

Demographic Variable	*n*	*%*
Accreditation		
CACREP	210	71.9
Non-CACREP	41	14.0
APA-accredited	9	3.1
CORE-accredited	2	0.7
CACREP accreditation in progress	12	4.1
Unsure	18	6.1
Missing	21	7.7
Cohort Model		
Cohort	167	57.2
Non-cohort	95	32.5
Missing	30	10.3
Priority of Future Career Goal		
Private Practitioner	64	21.9
Clinical Supervisor or Administrator	39	13.4
Lecturer	63	21.6
Professional Researcher	22	7.5
Scholar	63	21.6
Other	17	5.8
Missing	24	8.2

Note: For Accreditation, participants could choose more than one choice, thus n does not equal 292.

Regarding counseling doctoral students' number of years enrolled in their doctoral program, most students were in their third year (*n* = 66, 22.6%) (see Table 5), followed by second year (*n* = 55, 18.8%), fourth year (*n* = 53, 18.1%), first (*n* = 44, 1 5.1%), fifth (*n* = 32, 11.0%), and sixth year and longer (*n* = 18, 6.2%). Twenty-four (8.2%) students did not provide a response. Doctoral students' total credit hours completed since admission into their doctoral program ranged from 0 to 162 (*M* = 52.5; *SD* = 32.7), with 47 (16.1%) missing responses (see Table 5). For credit hours completed in qualitative research, 258 (88.4%) students' credit hours ranged from 0 to 16 (*M* = 4.25; *SD* = 3.58). Missing cases were 34 (11.6%). For credit hours completed in quantitative research, 261 (89.4%) students' hours ranged from 0 to 21 (*M* = 6.14; *SD* = 4.12). Missing cases were 31 (10.6%) (see Table 5)

Table 5

Frequencies of Number of Years in Program, Total Credit Hours, Qualitative Credit Hours and Quantitative Credit Hours (N = 292)

Demographic Variable	*n*	*%*	*M*	*SD*	*Range*
Number of Years in Program					
First	44	15.1			
Second	55	18.8			
Third	66	22.6			
Fourth	53	18.1			
Fifth	32	11.0			
Sixth and longer	18	6.2			
Missing	24	8.2			
Total Credit Hours Completed	245	83.9	52.5	32.7	0-162
Missing	47	16.1			
Qualitative Credit Hours Completed	258	88.4	4.25	3.58	0-16
Missing	34	11.6			
Quantitative Credit Hours Completed	261	89.4	6.14	4.12	0-21
Missing	31	10.6			

For the length of time enrolled in a program, 207 counseling doctoral students (70.9%) reported that they were consistently enrolled in their program as full-time students; while 61 (20.9%) were not consistently enrolled (*M* = 1.23, *SD* = .42) (see Table 6). Twenty-four (8.1%) students had missing answers. For the leave of absence, 217 (74.3%) students reported no leave since admission into their program, and 21 (7.2%) reported having taken a leave (*M* = .10, *SD* = .34). The number of missing responses was 54 (18.5%). For number of current jobs, the original choices included (a) no job, (b) one part-time, (c) two part-time or more, (d) one full-time, and (e) two full-time or more. To resolve the issues with a severe skewness of the data on this variable, categories were re-grouped as follows, (a) no job, (b) part-time, and (c) and full-time. The choices of "two part-time or more" jobs and "two full-time or more" jobs were combined with "full-time" variable. Of the 292 counseling doctoral students who responded, 137 (46.9%) reported having a part-time job, 91 (31.2%) reported having a full-time job, and 40

(13.7%) reported they had no job (M = 2.19, SD = .68). The number of missing responses was 24 (8.2%).

Table 6

Frequencies of Time Enrolled in Program, Leave of Absence, and Number of Current Jobs (N = 292)

Demographic Variable	n	%	Mean	SD
Time Enrolled as Full-time			1.23	.42
Consistently Enrolled	207	70.9		
Not Consistently Enrolled	61	20.9		
Missing	24	8.1		
			.10	.34
Leave of Absence				
No Leave	217	74.3		
Leave	21	7.2		
Missing	54	18.5		
			2.19	.68
Number of Current Jobs				
No Job	40	13.7		
Part-time	137	46.9		
Full-time	91	31.2		
Missing	24	8.2		

Most counseling doctoral students reported that they did not have pre-research experience or involvement in research before admission to program (see Table 7), as indicted by their responses of *Never* (30.5%, n = 89), followed by *Rarely* (27.4%, n = 80), *Sometime* (21.6%, n = 63), *Often* (7.9%, n = 23), and *Very Often* (4.4%, n = 13). The number of missing responses was 24 (8.2%). The mean was 9.15 and the standard deviation was 8.30. In terms of doctoral students' satisfaction with overall research training, the highest response rate was *Strongly Satisfied* (n = 95, 32.5%), followed by *Moderately Satisfied* (n = 63, 21.6%), *Somewhat Satisfied* (n = 61, 20.9%), *Not At All Satisfied* (n = 28, 9.6%), and *Completely Satisfied* (n = 21, 7.2%), with the number of missing responses as 24 (8.2%). The mean was 3.07 and the standard deviation was 1.14. For the number of hours spent weekly doing research, the mean was 9.17 (SD = 8.31), with the number of hours ranging from 0 to 50. The number of missing responses was 65 (22.3%).

Table 7

Frequencies of Pre-Research Experience, Satisfaction with Overall Research Training, Weekly Hours Spent Doing Research (N = 292)

Demographic Variable	*n*	*%*	*M*	*SD*
Pre-Research Experience	89	30.5	9.15	8.30
Never	80	27.4		
Rarely	63	21.6		
Sometime	23	7.9		
Often	13	4.4		
Very Often	24	8.2		
Missing				
Satisfaction with Overall Research Training	28	9.6	3.07	1.14
Not At All Satisfied	61	20.9		
Somewhat Satisfied	63	21.6		
Moderately Satisfied	95	32.5		
Strongly Satisfied	21	7.2		
Completely Satisfied	24	8.2		
Missing				
Weekly Hours Spent Doing Research	227	77.7	9.17	8.31
0-50	65	22.3		
Missing				

Scales of Measurement

Researcher Identity Formation Process Questionnaire-Revised (RIFPQ-R). The

RIFPQ-R was used to measure the formation of counseling doctoral students' identity as

researchers. The *RIFPQ-R* was the second instrument in the entire survey. It had the second

largest response rate and the second lowest non-completion rate compared to the other four

questionnaires. Of the total 292 responses, 14 (4.5%) did not complete the *RIFPQ-R*; thus, the

valid number of completed cases was 278 (see Table 8). Students' overall *RIFPQ-R* scores

ranged from 13.00 to 65.00, with the average score of 44.29 (*SD* = 7.80). For the subscales, the

Exploration scores ranged from 4.00 to 20.00 with a mean of 17.39 (*SD* = 2.46); commitment

scores ranged from 5.00 to 25.00 with a mean of 15.00 (*SD* = 4.12); and salience scores ranged

from 4.00 to 20.00 with a mean of 11.89 (*SD* = 3.63).

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Table 8

Descriptive Statistics for RIFPQ-R Scores (N = 278)

	Range	Minimum	Maximum	*M*	*SD*
RIFP Overall	52.00	13.00	65.00	44.29	7.79
Exploration	16.00	4.00	20.00	17.39	2.46
Commitment	20.00	5.00	25.00	15.00	4.12
Salience	16.00	4.00	20.00	11.89	3.63

Research training environment scale-revised short (Form) (RTES-RS). Before

conducting the main data analysis, preliminary analyses were conducted to examine the relevant

statistical assumptions and to confirm the reliability of *RTES-RS*. The *RTES-RS* was used to

measure counseling doctoral students' perceptions of their research training environment. A

total of 292 students completed the *RTES-RS*. It was the first instrument in the survey and had

the largest response rate and the lowest non-completion rate compared to the other four

questionnaires. Students' overall *RTES-RS* scores ranged from 18.00 to 75.00, with the average

score of 56.30 and a standard deviation of 5.40. The two *RTES-RS* subscales included

Interpersonal (*M* = 24.85, *SD* = 3.15) with a range of 8.00 to 35.00 and Instructional (*M* = 31.44,

SD = 3.54) with a range of 10.00 to 41.00 (see Table 9).

Table 9

Descriptive Statistics for RTES-RS (N = 292)

	Range	Minimum	Maximum	*M*	*SD*
RTES-RS	57.00	18.00	75.00	56.30	5.40
Interpersonal RTES-RS Subscale	27.00	8.00	35.00	24.85	3.15
Instructional RTE S-RS Subscale	31.00	10.00	41.00	31.44	3.54

Using IBM SPSSSCALE, a correlation analysis for internal consistency of the 18-item *RTES-RS* yielded Cronbach's α values ranging from .88 to .89 (see Table 10). The overall alpha of internal consistency of the instrument was .89. The reliability of the *RTES-RS* was consistent with the previous studies (Kahn & Miller, 2000; Kahn, 2001) showing the coefficient alphas as .88 and .89 respectively.

Table 10

RTES-RS Cronbach Alphas for Each Item (N = 292)

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
RTES-RS1	.38	.89
RTES-RS2	.61	.88
RTES-RS3	.29	.89
RTES-RS4	.59	.88
RTES-RS5	.28	.89
RTES-RS6	.35	.89
RTES-RS7	.68	.88
RTES-RS8	.68	.88
RTES-RS9	.65	.88
RTES-RS10	.49	.88
RTES-RS11	.26	.89
RTES-RS12	.64	.88
RTES-RS13	.64	.88
RTES-RS14	.58	.88
RTES-RS15	.53	.88
RTES-RS16	.59	.88
RTES-RS17	.48	.88
RTES-RS18	.73	.88

Scholarly activity scale (SAS). The *SAS* was used to measure counseling doctoral students' current research activity (see Appendix E). Before conducting the main data analysis, preliminary analyses was conducted to examine the relevant statistical assumptions and to confirm the reliability of the *SAS* measurement. The *SAS* contains nine items ranging from the minimum score of 9 to the maximum score of 37. Overall, 16 students (5.5%) did not complete the *SAS* and 276 students completed the *SAS,* with scores ranging from 7.00 to 36.00 (*M* = 18.91,

$SD = 6.10$). In the previous studies using the *SAS*, the Kuder-Richardson 20 (K-R-20) internal

consistency was originally calculated using 0 and 1 dichotomy (Kahn, 2001; Kahn & Scott,

1997). The data in these studies were severely skewed. A score of 1 indicated that a participant

had some involvement in particular research activity, regardless of how much or how little. A

score of 0 indicated that a participant had no experience with that activity. However, in the

present study, due to the mildly skewed *SAS* data, the scores were not dichotomized for further

analyses (see Table 11). Instead, the original untransformed scores were used in the main

analyses.

Table 11

Descriptive Statistics for SAS (N = 276)

	Range	Minimum	Maximum	*M*	*SD*
SAS	29.00	7.00	36.00	18.91	6.10

Alphas for individual items indicated that all nine items contributed positively to

enhancement of the overall reliability of the *SAS* resulting in an overall Cronbach's alpha ranging

from .71 to .76 and the overall alpha of internal consistency was .76 indicating adequate

reliability (see Table 12). The reliability of the *SAS* was consistent with the previous studies

considering that in the previous studies the Kuder-Richardson 20 reliability values were .70

and .68 (Kahn, 2001; Kahn & Scott, 1997, respectively).

Table 12

Scholarly Activity Cronbach Alphas (N= 276)

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
SAS1	.50	.73
SAS2	.47	.73
SAS3	.59	.71
SAS4	.52	.72
SAS5	.57	.71
SAS6	.38	.75
SAS7	.42	.74
SAS8	.25	.76
SAS9	.27	.76

Research Questions and Results

Research Question 1

What are the psychometric properties of the *Researcher Identity Formation Process*

Questionnaire-Revised (RIFPQ-R)?

Research hypothesis 1. The *RIFPQ-R* is a valid and reliable questionnaire. The

preliminary descriptive statistics for the *RIFPQ-R* were conducted to examine the assumptions of

a factor analysis. Of the total 292 responses in the study, 14 counseling doctoral students (4.5%)

did not complete the *RIFPQ-R*; thus, the valid number of completed cases was 278 and

incomplete 14 cases. When considering a sample size, Kahn (2006) recommended 300 as the

minimum sample size to achieve sampling adequacy; whereas, for a principal component

analysis, Guadagnoli and Velicer (1988) asserted based on their reviews from several studies that

an absolute minimum sample size is more relevant to a principle component analysis (PCA)

rather than the number of cases to item ratios. However, the range of items recommended by

Barrett and Kline (1981) was 50 and 400. Thus, in the present study, 278 counseling doctoral

students were completed the *RIFPQ-R,* which is within the acceptable range of 50 to 400.

Reliability. As a part of the main analysis to test the research hypothesis 1, Cronbach's

alphas were calculated to examine the reliability of the *RIFPQ-R* (see Table 13). The overall

Cronbach's alpha was .83, which is considered good when comparing to the acceptable cut-off

level of .70 (Santos, 1999). The alpha coefficient indicated that the *RIFPQ-R* is a reliable

instrument. According to Ferketich (1991), with regard to individual items, corrected item-total

correlations should range from .30 to .70 for a reliable scale. In this study, two items (i.e., 3, 5)

showed the corrected item-total correlation of less than .30 (.25 and .18, respectively). Item 5

showed the lowest, .18. Based on the lowest item-total correlation item 5 was the only item

deleted for further study.

Table 13

RIFPQ-R Cronbach Alphas (N = 278)

	Corrected Item Total Correlation	Cronbach's Alpha if Item Deleted
RIFPQ-R1	.32	.83
RIFPQ-R2	.36	.82
RIFPQ-R3	.25	.83
RIFPQ-R4	.48	.82
RIFPQ-R5	.18	.83
RIFPQ-R6	.50	.82
RIFPQ-R7	.54	.81
RIFPQ-R8	.58	.81
RIFPQ-R9	.31	.83
RIFPQ-R10	.44	.82
RIFPQ-R11	.42	.82
RIFPQ-R12	.38	.82
RIFPQ-R13	.62	.81
RIFPQ-R14	.42	.82
RIFPQ-R15	.50	.82
RIFPQ-R16	.45	.82
RIFPQ-R17	.54	.81

Note: Item 5 was deleted in further analysis.

   Validity. A principal component analysis (PCA) via a promax rotation was then

conducted to examine the validity of the *RIFPQ-R*. Communalities of the 16 items ranged

from .29 through .65. Costello and Osborn (2005) suggested deleting communalities below .30.

Two items with lowest communalities, .30 for item 9 and .29 for item 12 were examined in

terms of their effect on the overall factor structure and deleted one by one in further analyses. In doing so, the problematic items were found to distort the entire factor structure as well. Thus, item 9 and 12 were deleted from further analyses.

A second principal component factor analysis with the 14 remaining items was conducted, with communalities ranging from .42 to .69 (see Table 14). Five types of analyses were used to determine the number of principle components in the *RIFPQ-R*: (1) Kaiser Criterion, (2) scree plot, (3) amount of variance explained by an extracted factor component in relation to the total variance (4) parallel analysis, and (5) theoretical aspects.

Kaiser-Guttman Criterion with eigenvalues greater than one was applied to determine the number of factor components (Netemeyer, Bearden, & Sharma, 2003). The Kaiser Criterion (KMO) was .83, which was greater than the recommended cuff-off level of .50 (Field, 2009); thus, the use of an exploratory factor analysis was appropriate for the data (Munro, 2005). Using Kaiser Criterion (KMO) of eigenvalue greater than one, three eigenvalues were found to be greater than one (i.e., 4.47, 1.96, and 1.30) (see Table 14). Also, the probability of the Bartlett's sphericity test for homogeneity and normality was .000, which satisfied the requirement that the probability must be less than the level of significance, .001.

Table 14

RIFPQ-R Communalities, Component Loading Pattern, Eigenvalues, and Variance (N = 278)

	Component			Communality
	1(Commitment)	2(Salience)	3(Exploration)	
RIFPQ-R1			.78	.60
RIFPQ-R2			.83	.69
RIFPQ-R3			.66	.42
RIFPQ-R4			.66	.54
RIFPQ-R6	.84			.58
RIFPQ-R7	.54			.51
RIFPQ-R8	.44	.44		.57
RIFPQ-R10	.68			.47
RIFPQ-R11	.73			.50
RIFPQ-R13	.69			.62
RIFPQ-R14		.71		.51
RIFPQ-R15		.86		.69
RIFPQ-R16		.81		.57
RIFPQ-R17		.45		.47
Eigenvalues	4.47	1.96	1.30	
% of variance	31.94	14.02	9.25	
Total variance			55.21	

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 5 iterations.

Second, the scree plot (Cattell, 1966) was inspected to determine any cut-off break in the slope or discontinuity in eigenvalues that exists on the graph of the scree plot. The slight cut-off line in the slope was found between the third factor component and the fourth (see Figure 2). The result of the scree test is clearer when the sample size is larger (Gorsuch, 1983), specifically, sample size greater than 200 is preferred (Netemeyer, Bearden, & Sharma, 2003). Accordingly, the scree test for this study the *RIFPQ-R* supports a three-factor component solution.

Figure 2

Scree Plot from PCA for RIFPQ-R
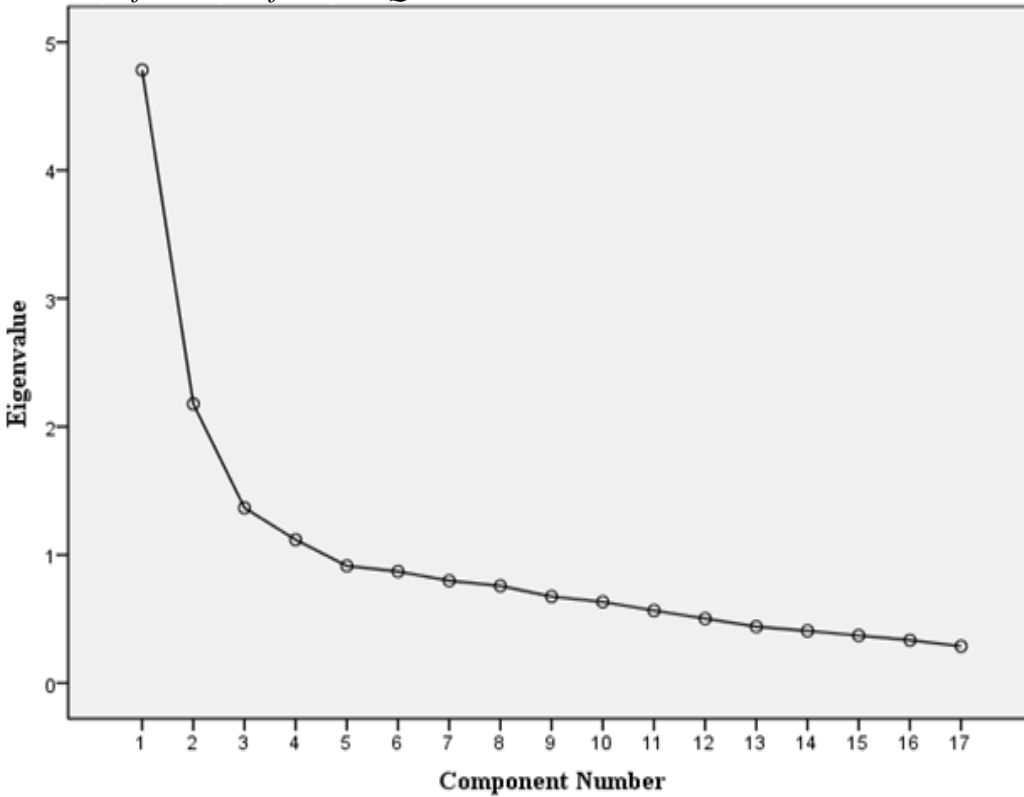
Third, considering the total amount of variance explained by the selected factor

components, the factor component solution should cumulatively account for 50% to 60% of the

variance in the items and at the same time, any of the extracted factor components should at least

account for 5% of the total variance explained (Netemeyer, Bearden, & Sharma, 2003). When

applying those rules to the present study results, a three-factor component solution was

considered reasonable and suitable for the dataset, since this solution accounts for more than 50%

of the total variance explained, i.e., 55.21%; thus resulting in 31.94% for the first factor, 14.02%

for the second, and the smallest amount of the variance, 9.25%, which were all greater than 5%

(see Table 14). For the factor component interpretation, the three-factor component solution

from the outputs of the PCA represented *Exploration*, *Commitment*, and *Salience* based on the

factor component loadings on each item. Component 1 indicated *Commitment*, which comprised

six items; 6, 7, 8, 10, 11, and 13, with component loadings of .84, 54, 44, 68, 73, and 69, respectively. Component 2 indicated *Salience*, which comprised five items; 8, 14, 15, 16, and 17, with component loadings of .44, .71, .86, 81, and 45, respectively. Component 3 indicated *Exploration* which comprised four items; 1, 2, 3, and 4, with component loadings of .78, .83, .66, and .66, respectively (see Table 14). A minimum pattern loading of .40 or more was considered acceptable (Comrey & Lee, 1992) in the present study. Item 8 cross-loaded on components 1 and 2 with the same loading (i.e., 44). Item 8 was designed to primarily indicate commitment, thus, it was determined that it would remain in the commitment component even though the loadings were on both commitment and salience. The quality of the item variables measuring the factor components was determined by examining the size of the loadings and cross-loadings.

Fourth, a parallel analysis was utilized to determine the number of principal components in the dataset (Hayton, Allen, & Scarpello, 2004; Kahn, 2006). Zwick and Velicer (1986) found that the effectiveness of parallel analysis is superior to Kaiser's criterion and the scree plot in determining the number of factor components in PCA. The parallel analysis was conducted using the Monte Carlo PCA® software (Watkins, 2000).   Eigenvalues were generated from the Monte Carlo parallel analysis simulation with 278 subjects, who completed the 14 items included in the *RIFPQ-R* and 1,000 replications. The eigenvalues from the principal component analysis were compared with the ones generated from the Monte Carlo parallel analysis to identify more reliable numbers of factor components (Bianchi, De Giuli, Fantazzini, & Maggi, 2011; Watkins, 2000). The first three eigenvalues from the PCA (i.e., 4.47, 1.96, and 1.30) were greater than the ones generated from the Monte Carlo analysis (i.e., 1.40, 1.30, 1.23; respectively, see Table 15). The result of comparison between the PCA eigenvalues and eigenvalues from the Monte Carlo simulation indicated that the *RIFPQ-R* contained three factor components, which is consistent

with theoretical aspects of *RIFP*. The results from the comparison support the three-factor component solution.

Table 15

Comparisons of PCA to Monte Carlo: RIFPQ-R (N = 278)

	% of Variance	PCA Eigenvalues		Monte Carlo (MC) Eigenvalues
Component		N of items = 14		N of items = 14
1	31.94	**4.47**	>	**1.40**
2	14.02	**1.96**	>	**1.30**
3	9.25	**1.30**	>	**1.23**
4	6.70	.94	<	1.17
5		.81	<	1.11
6		.77	<	1.10

Note. N of Replications = 1,000

Fifth, a priori criteria related to the number of factor components underlying a set of items were considered. Most instrument developers assume through a scale development process that scales contain factor components varying on a basis of their theoretical points of view (Netemeyer, Bearden, & Sharma, 2003). According to Tabachnick and Fidell (2007), a reasonable number of factor components with eigenvalues greater than one in this study should be between three and six. The maximum number of factor components extracted in this study was three, which is consistent with the abovementioned criteria. Thus, other factor component solutions were discarded. From theoretical perspective, three underlying factor constructs were proposed when designing the instrument *RIFPQ-R*. Thus, by considering various criteria and statistical analyses, the three-factor component solution was deemed appropriate for the present study. The results of the PCA indicated that the 14-item *RIFPQ-R* supports a three factor component solution and those three principal components are *Commitment*, *Salience*, and *Exploration*, which is consistent with the underlying theoretical perspective. The 14 item revised *RIFPQ-R* was used in the research analyses for the research questions in the present study. The

descriptive statistics with those 14 items was presented in Table 16. In addition, all the analyses

for the research questions in the present study were performed with the 14-item *RIFPQ*-R scores.

After the deletion of three items, students' overall *RIFPQ-R* scores ranged from 14.00 to

70.00, with the mean score of 44.64 (*SD* = 8.56) (see Table 16). In addition, the Exploration

subscale scores ranged from 4.00 to 20.00, with a mean of 17.40 (*SD* = 2.46); Commitment

subscale scores ranged from 6.00 to 30.00, with a mean of 18.35 (*SD* = 4.89); and Salience

subscale scores ranged from 4.00 to 20.00, with a mean of 11.89 (*SD* = 3.64).

Table 16

Descriptive Statistics of the RIFPQ with 14 Items (N = 278)

	Range	Minimum	Maximum	*M*	*SD*
RIFP Overall	56.00	14.00	70.00	44.64	8.56
Exploration	16.00	4.00	20.00	17.40	2.46
Commitment	24.00	6.00	30.00	18.35	4.89
Salience	16.00	4.00	20.00	11.89	3.64

Research Question 2

Is there a significant relationship between counseling doctoral students' researcher

identity formation process (RIFP) and their research training environment (RTE)?

Research hypothesis 2. A significant relationship exists between the formation of

counseling doctoral students' identity as researchers and their research training environment.

This hypothesis was tested using correlation analysis. First, preliminary analyses were

conducted to examine the assumptions of the correlation models in terms of the (a) sample size,

(b) missing data, (b) normality, (c) outliers, and (d) linearity. Four outliers were eliminated from

the initial data set following the preliminary analyses. The histograms and the normal Q-Q plots

for the variables indicated that the sample was roughly normally distributed. The data

distribution showed rough linearity in the scatterplot matrix. The Fit Line in the scatterplot

indicated homoscedasticity, indicating that the data collected did not fit well with the assumption

of bivariate normal distributions for parametric correlation models. However, overall, the data

seemed to fit the assumption of a conditional normal distribution more adequately, although

rough linearity might have biased the results of the correlation analysis. In addition, to ensure

the sampling adequacy in the study, a G-power® analysis for the correlation was performed with

a bivariate normal model procedure (Erdfelder, Faul, & Buchner, 1996). The power (1-β error

probability) for the correlation was .999 for the post hoc test at the alpha level .05 and the

coefficient of determination was .05. As a result of the power analysis, Figure 3 shows a plot of

the power (1-β error probability) range for the bivariate normal correlation with an effect size f^2

of 0.15 as the total sample size reached 400 and as the sample size reached to 278, the power was

increased to 0.998 with an α error probability of .05.

Figure 3

Plotting Sample Size and Power in Bivariate Correlation
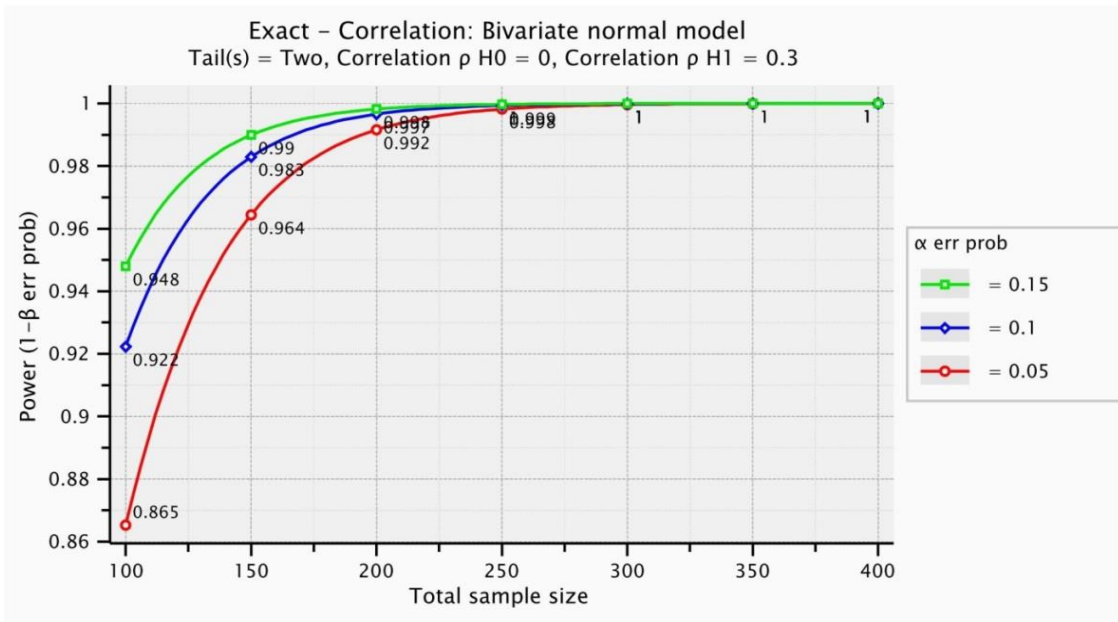
Next, Pearson's correlation coefficients were calculated to examine the relationship between counseling doctoral students' research training environment (RTE) and their researcher identity formation process (RIFP). The relationships were analyzed between counseling doctoral students' *RIFPQ-R* overall scores and Exploration, Commitment, and Salience subscale scores to their *RTES-RS* overall scores and subscale scores for interpersonal and instructional (see Table 17). The overall *RIFPQ-R* scores were calculated by summing up all items included in the *RIFPQ-R*. Students' *RIFPQ-R* scores ranged from 13.00 through 65.00 based on the 14 items from the factor analysis. Students' subscales were calculated by summing up the scores on the extracted items for each component. The descriptive statistics of the variables for this correlation analysis including students' *RIFPQ-R* and *RTES-RS scores* were described in Table 17. Of the total number of sample size 292, 278 participants completed the *RIFPQ-R* and 14 did not complete the *RIFPQ-R*. The mean of the overall RTE was 56.30 (*SD* = 5.40) and its subscales, *Interpersonal* and *Instructional* showed the means of 24.85 and 31.44 (*SD* = 3.15 and 3.54, respectively). The mean of the overall *RIFPQ-R* was 47.64 (*SD* = 8.56) and its three subscales, *Exploration*, *Commitment*, and *Salience*, showed means of 17.40, 18.35, and 11.35 (*SD* = 2.46, 4.89, and 3.64 respectively).

Table 1**7**

Means and Standard Deviations for RTES-RS and RIFPQ Scores

	M	*SD*
RTE Overall	56.30	5.40
Interpersonal RTE	24.85	3.15
Instructional RTE	31.44	3.54
RIFP Overall	47.64	8.56
Exploration	17.40	2.46
Commitment	18.35	4.89
Salience	11.35	3.64

The correlation analysis showed a significant relationship between counseling doctoral students' *RTES-RS* overall and *RIFPQ-R* overall scores, $r = .25$, $p < .01$ (see Table 18). Students' *RTES-RS* scores were significantly correlated with all subscales of *RIFPQ-R*; Exploration, Commitment, and Salience ($r = .22$, $p = .01$; $r = .18$, $p = .01$; $r = .18$, $p = .01$, respectively). Students' scores of interpersonal and instructional *RTES-RS* subscales showed significant relationships with their overall *RIFPQ-R* scores ($r = .15$, $p < .01$; $r = .24$, $p < .01$, respectively). The *RTES-RS* instructional subscale was significantly correlated with the *RIFPQ-R* subscales of Exploration, Commitment, and Salience ($r = .20$, $p < .01$; $r = .20$, $p < .01$; $r = .15$, $p < .05$, respectively). The *RTES-RS* interpersonal subscale was significantly correlated with the Exploration and Salience subscale for the *RIFPQ-R* but not Commitment ($r = .15$, $p < .05$; $r = .14$, $p < .05$; $r = .08$, $p > .05$, respectively). As students' RTE increased, their RIFP tended to increase as well. However, using Cohen's scale for the strength of the correlations; .10 or less as small, greater than .10 to .30 as moderate, and greater than .30 to .50 as strong; all of the correlations were weak, which provides inconclusive evidence for the association between students' RTE and RIFP.

Table 18

Pearson Correlations for RIFPQ-R Overall and Subscale to RTES-RS Overall and Subscale Scores

	Exploration	Commitment	Salience	RIFP
RTE	.22**	.18**	.18**	.25**
RTE Interpersonal	.15*	.08	.14*	.15**
RTES Instructional	.20**	.20**	.15*	.24**

Note: *RTES-RS* measures Research Training Environment and *RIFPQ-R* measures Researcher Identity Formation Process.
Note: ** $\leq .01$ level (2-tailed), * $\leq .05$ level (2-tailed).

Research Question 3

Is there a significant relationship between the counseling doctoral students' researcher identity formation and their research activity?

Researcher hypothesis 3. A significant relationship exists between counseling doctoral students' researcher identity formation process (RIFP) and their research activity (RA). This relationship was examined using a correlation analysis. Assumptions were examined in terms of the (a) sample size, (b) missing data, (b) normality, (c) outliers, and (d) linearity. The histograms and the normal Q-Q plots for all the variables included in the correlation analyses indicated that the sample was roughly normally distributed. No outliers were identified. Of the total sample size of 292, 278 participants completed the *RIFPQ-R* and 276 completed the SAS. For incompletes, 14 were not completed for the *RIFPQ-R* and 16 for the SAS. The data distribution showed rough linearity in the scatterplot matrix. The Fit Line in the scatterplot indicated homoscedasticity for the two main variables, RIFP and RA. As a result, the data did not support the assumption of bivariate normal distributions. However, the data seemed to support the assumption of conditional normal distribution, although rough linearity might cause some bias in the results of the correlation analysis.

The descriptive statistics of the variables, *RIFPQ-R* and *SAS,* for this correlation analysis after deleting the three items from the *RIFPQ-R* were in Table 19. The mean of *SAS* was 18.61 (*SD* = 6.10) (see Table 19). The mean of the overall *RIFPQ-R* was 47.64 (*SD* = 8.56) and its three subscales, *Exploration*, *Commitment*, and *Salience*, showed means of 17.40, 18.35, and 11.35 (*SD* = 2.46, 4.89, and 3.64 respectively).

Table 19

Means and Standard Deviations for RA and RIFPQ Scores

	M	*SD*
RA	18.91	6.10
RIFP Overall	47.64	8.56
Exploration	17.40	2.46
Commitment	18.35	4.89
Salience	11.35	3.64

Pearson's correlation coefficients were calculated to examine the relationship between counseling doctoral students' research activity (RA) and their researcher identity formation process (RIFP). Significant correlations were found between *SAS* scores and *RIFPQ-R* overall scores ($r = .18, p < .01$) (see Table 20). Additionally, significant correlations with Commitment and Salience to research activity was indicated ($r = .17, p < 01; r = .13, p < .01$); however Exploration was not significantly related to research activity ($r = .11, p > .05$). As students' RIFP increased, their RA tended to increase as well. However, using Cohen's scale for strength of the correlations; .10 as small, .30 as moderate, and .50 as strong; all of the correlations were weak, which provides inconclusive evidence for the association between students' RA and RIFP.

Table 20

Pearson Correlations for RIFPQ-R to SAS Scores

	RIFP	Exploration	Commitment	Salience
RA	**.18**	.11	.17**	.13*

Note: SAS measures Research Activity (RA) and *RIFPQ-R* measures Researcher Identity Formation Process (RIFP).
Note: **≤ .01 level (2-tailed).*≤ .05 level (2-tailed).

Research Question 4

Is there a significant relationship between counseling doctoral students' research activity (RA) and their research training environment (RTE)?

Research hypothesis 4. A significant correlation exists between counseling doctoral students' research training environment (RTE) and their research activity (RA). The correlation analysis was used to examine this relationship. The descriptive statistics of the variables for this correlation analysis including students' *SAS* and *RTES-RS* scores are provided in Table 21. The mean of the overall *RTES-RS* scores was 56.30 (*SD* = 5.40) and its subscales, *Interpersonal* and *Instructional* showed the means of 24.85 and 31.44 (*SD* = 3.15 and 3.54, respectively). The mean of *SAS* was 18.91 (*SD* = 6.10).

Table 21

Means and Standard Deviations for RTES-RS and SAS Scores

	M	SD
RTE Overall	56.30	5.40
Interpersonal RTE	24.85	3.15
Instructional RTE	31.44	3.54
RA	18.91	6.10

Pearson's correlation coefficients were calculated to examine the relationship between the research activity (RA) and the research training environment (RTE). The correlation analysis showed insignificant associations between counseling doctoral students' overall *RTES-RS* overall and subscale scores and their *SAS* scores ($r = -.10$, $p = .09$) as well as between their overall *RTES-RS* and their two subscales scores (i.e., Interpersonal and Instructional) from the *RTES-RS* ($r =. 08$, $p = .17$; $r = -.05$, $p = .38$, respectively) (see Table 22). The correlation analyses showed that students' overall *RTES-RS* and subscale scores correlated weakly with their *SAS* scores, which provides inconclusive evidence for the association between RTE and RA. Thus, the results did not support the research hypothesis.

Table 22

Pearson Correlation for SAS to Overall RTES-RS and Subscale Scores

	RTE	RTE Interpersonal	RTE Instructional
RA	-.10	.08	-.05

Note: *RTES-RS* measures Research Training Environment (RTE) and *SAS* measures Research Activity (RA).

Research Question 5

How well do the auxiliary variables (i.e., number of years in program, total credit hours completed, number of credit hours in quantitative research completed, number of credit hours in qualitative research completed, number of current jobs, pre-research experience, satisfaction with

overall research training, and weekly hours spent doing research) predict counseling doctoral students' researcher identity formation process (RIFP)?

Research hypothesis 5. Eight auxiliary variables (i.e., number of years in program, total credit hours completed, number of credit hours in quantitative research completed, number of credit hours in qualitative research completed, number of current jobs, pre-research experience, satisfaction with overall research training, and weekly hours spent doing research) predict counseling doctoral students' researcher identity formation process. The multiple regression analysis was used to test this hypothesis. A standard multiple regression analysis was performed with auxiliary variables as the independent variables and *RIFPQ-R* scores as the dependent variable. No violations of the assumptions were identified except for three outliers regarding weekly hours spent doing research. The demographic questionnaire was not forced choice as the three questionnaires were in the present study; thus out of the total sample size of 292, 205 participants (70.2%)completed the demographic questionnaire and 87 students(29.8%) did not complete the questionnaire. To ensure sampling adequacy, a post hoc power analysis was conducted using the software package, GPower® (Erdfelder et al., 1996). The sample size of 205 was used for the statistical power analyses and an eight predictor variable equation was used as a baseline. The recommended effect sizes used for this assessment were as follows: small ($f\,2$ = .02), medium ($f\,2$ = .15), and large ($f\,2$ = .35) (Cohen, 1977). The alpha level used for this analysis was $p < .05$. The post hoc analyses revealed the statistical power for this study was .40 for detecting a small effect, whereas the power exceeded .99 for the detection of a moderate to large effect size. Thus, there was more than adequate power (i.e., power * .80) at the moderate to large effect size level, but less than adequate statistical power at the small effect size level (see Figure 4). The power of .999 was achieved through a post hoc test when setting the alpha level

at .05 and medium effect size of $f^2 = .15$. Figure 4 illustrates the change of power level for the linear multiple regression with the eight predictors. The plot shows that when the total sample size reached 200, the power increased to 0.986 at the medium effect size f^2 of .15 and α error probability of .05.

Figure 4

Power Analysis for Linear Multiple Regression of RIFPQ-R Scores to Eight Predictors
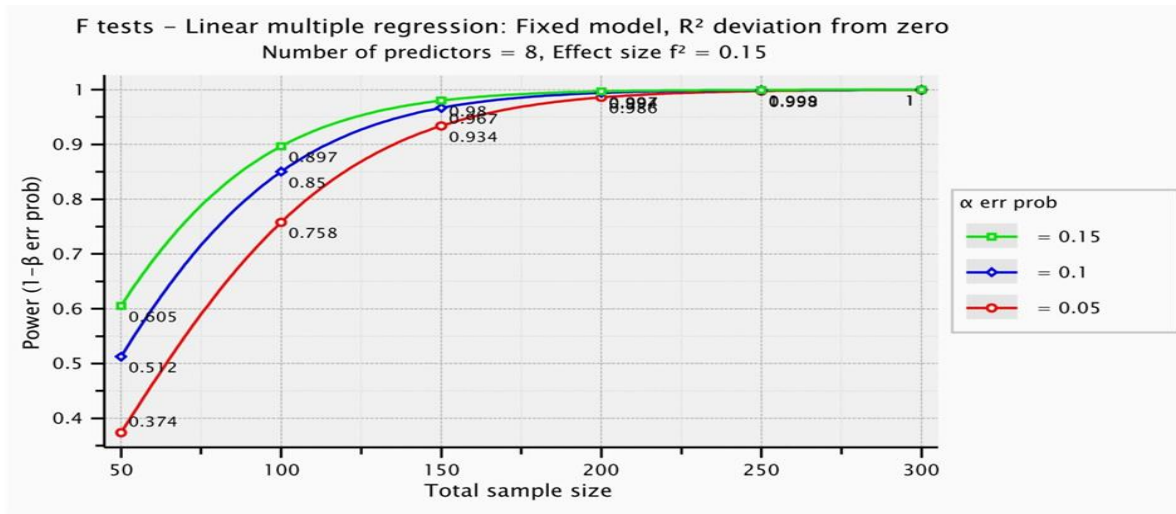
The descriptive statistics of the auxiliary variables and *RIFPQ-R* for this regression analysis were described in Table 23. The mean for the *RIFP* was 47.86 (*SD* = 8.33) (see Table 23). The means for the auxiliary variables including year in program, total credit hours, credit hours for quantitative research, credit hours for qualitative research, current job, pre-research experience, satisfaction for their research training experience, and weekly spent hours doing research were 3.04, 54.15, 6.12, 4.20, 2.18, 2.21, 3.08, and 9.23 (*SD* = 1.46, 33.16, 4.17, 3.42, .68, 1.13, 1.15, and 8.40 respectively).

Table 23

Means and Standard Deviations for Eight Auxiliary Variables and RIFPQ-R Scores

	M	*SD*
RIFP	47.86	8.33
Number of Years in Program	3.04	1.46
Total Credit Hours Completed	54.15	33.16
Quantitative Research Completed	6.12	4.17
Qualitative Research Completed	4.20	3.42
Number of Current Jobs	2.18	.68
Pre-Research Experience	2.21	1.13
Satisfaction with Overall Research Training	3.08	1.15
Weekly Hours Spent Doing Research	9.23	8.40

Predictability of eight auxiliary variables on RIFPQ-R scores. A standard multiple

regression analysis was performed to test whether the eight auxiliary variables significantly

predicted counseling doctoral students' researcher identity formation process. The result of the

multiple regression model with all eight predictors produced $R^2 = .17$, $F(7, 197) = 5.36$, $p < .001$,

indicating that this linear regression model explained 16.81% of the total variance. Counseling

doctoral students' number of credit hours completed in qualitative research and pre-experience

with research showed relative importance among the auxiliary variables as their positive

regression beta weights ($\beta = .22$, $p < .01$; $\beta = .28$, $p < .01$) were significant, indicating that

students who scored higher on these variables were expected to have higher scores on the

RIFPQ-R after controlling for the other six variables (see Table 24). Students' number of years

in their counseling program had a significant negative regression weight ($\beta = .20$, $p \leq .05$),

indicating that students who stayed longer in their doctoral program had lower scores on the

RIFPQ-R. The total credit hours completed, quantitative research completed, number of current

jobs, satisfaction with research training, and weekly hours spent doing research did not

significantly contribute to the dependent variable as following $\beta = .05, p > .05; \beta = -.03, p > .05; \beta = -.09, p > .05; \beta = .11, p > .05;$ and $\beta = .13, p > .05$, respectively.

Additionally, the semi-partial regression coefficient (sr) associated with each of these three significant regression weights showed that each of those three given independent variables in the multiple regression analysis explained a specific portion of variance (sr^2) in the outcome variable. The semi-partial correlation for the number of years students were in their program explained 1.96% of variance in their *RIFPQ-R* scores The number of credit hours students completed in qualitative research explained 3.24% of the variance and their pre-research experience explained 7.29% of the variance in the regression model (see Table 24). These results indicated that students' pre-research experience contributed to most of the variance, while the number of years in their program and number of qualitative research hours completed contributed less to doctoral students' researcher identity formation.

Table 24

Multiple Regression Analysis for RIFPQ-R Scores for Eight Auxiliary Variables

		B	β	Semi-partial(sr.)
Model 1	Number of Years in Program	-1.01*	-.20*	-.14*
	Total Credit Hours Completed	.01	.05	.04
	Quantitative Research Completed	-.05	-.03	-.03
	Qualitative Research Completed	.48**	.22**	.18*
	Number of Current Jobs	-.95	-.09	-.08
	Pre-Research Experience	1.88**	.28**	.27**
	Satisfaction with Research Training	.70	.11	.10
	Weekly Hours Spent Doing Research	.12	.13	.13

Note: $R^2 = .17$, $R = .41$; $**p \leq .01$, $*p < .05$

Research Question 6

How well do the eight auxiliary variables (i.e., number of years in program, total credit hours completed, number of credit hours in quantitative research completed, number of credit hours in qualitative research completed, number of current jobs, pre-research experience,

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satisfaction with overall research training experience, and weekly hours spent doing research) predict counseling doctoral students' research training environment (RTE)?

Research hypothesis 6. Eight auxiliary variables (i.e., number of years in program, total credit hours completed, number of credit hours in quantitative research completed, number of credit hours in qualitative research completed, number of current jobs, pre-research experience, satisfaction with overall research training experience, and weekly hours spent doing research) predict counseling doctoral students' research training environment (RTE). Primary analyses were performed to evaluate the assumptions. No violations of the assumptions were identified.

The descriptive statistics of the auxiliary variables and *RTES-RS* for this regression analysis were described in Table 25. The mean for the *RTES-RS* was 56.45 ($SD = 4.84$) (see Table 23). The means of the auxiliary variables including year in program, total credit hours, credit hours for quantitative research, credit hours for qualitative research, current job, pre-research experience, satisfaction for their research training experience, and weekly spent hours doing research were 3.04, 54.15, 6.12, 4.20, 2.18, 2.21, 3.08, and 9.23 ($SD = 1.46, 33.16, 4.17, 3.42, .68, 1.13, 1.15,$ and 8.40 respectively).

Table 25

Means and Standard Deviations for Eight Auxiliary Variables and RTES-RS Scores

	M	*SD*
RTE	56.45	4.84
Number of Years in Program	3.04	1.46
Total Credit Hours Completed	54.15	33.16
Quantitative Research Completed	6.12	4.17
Qualitative Research Completed	4.20	3.42
Number of Current Jobs	2.18	.68
Pre-Research Experience	2.21	1.13
Satisfaction with Overall Research Training	3.08	1.15
Weekly Hours Spent Doing Research	9.23	8.40

A multiple regression analysis was conducted to test whether the eight auxiliary variables significantly predicted counseling doctoral students' research training environment. The results of the multiple regression analysis indicated that the overall regression equation did not predict doctoral students' *RTES-RS scores* (R^2 = .0488, $F(8, 196)$ = 1.25, p = .27), indicating that this linear regression model explains 4.88% of the total variance. Counseling doctoral students' number of current jobs showed relative importance among the auxiliary variables as the positive regression beta weight (β = .17, $p < .05$) was significant (see Table 26). Given the semi-partial regression coefficient (sr) of .17, number of current jobs (i.e., no job, part-time, or full-time) independently explained 2.6% of variance (sr^2) (see Table 26). Number of years in program, total credit hours completed , quantitative research completed, qualitative research completed, pre-research experience, satisfaction with research training, and weekly hours spent doing research were not significantly predicting the dependent variable as following β = *-.01, p > .05; β = .01, p > .05; β = -.03, p > .05; β = .12, p > .05; β = -.01, p > .05; β = .08, p > .05;* and β = *-.06, p > .05* respectively. Thus, the results indicated that number of current jobs students held was the only variable that contributed to the variance in students' research training environment.

Additionally, the semi-partial regression coefficient (sr) associated with each of these the significant regression weight showed that the given independent variable in the multiple regression analysis explained a specific portion of variance (sr^2) in the outcome variable. The semi-partial correlation for the number of current jobs explained 2.56% of variance in students' *RTES-RS* scores (see Table 26). The result indicated that students' number of current jobs contributed to most of the variance, while other independent variables contributed nothing to doctoral students' perceptions on their research training environment.

Table 26

Multiple Regression Analysis for RTES-RS Scores for Eight Auxiliary Variables

		B	β	Semi-partial(sr.)
Model 1	Number of Years in Program	-.04	-.01	-.01
	Total Credit Hours Completed	.01	.01	.03
	Quantitative Research Completed	-.03	-.03	-.02
	Qualitative Research Completed	.17	.12	.10
	Number of Current Jobs	**1.18***	**.17***	**.16***
	Pre-Research Experience	-.04	-.01.	-.01
	Satisfaction with Research Training	.35	.08	.08
	Weekly Hours Spent Doing Research	-.08	-.06	-.06

Note: $R^2 = .05$, $R=.221$, $*p< .05$

Research Question 7

How well do the eight auxiliary variables (i.e., number of years in program, total credit hours completed, number of credit hours in quantitative research completed, number of credit hours in qualitative research completed, number of current jobs, pre-research experience, satisfaction with overall research training experience, and weekly hours spent doing research)predict counseling doctoral students' research activity?

Research hypothesis 7. The eight auxiliary variables (i.e., number of years in program, total credit hours completed, credit hours in quantitative completed, credit hours in qualitative research completed, number of current jobs, pre-research experience, satisfaction with overall research training experience, and weekly hours spent doing research) predict counseling doctoral students' research activity (RA).

The descriptive statistics of the auxiliary variables and *SAS* for this regression analysis were described in Table 27. The mean for the *SAS* was 19.05 (*SD* = 6.07). The means for the auxiliary variables including year in program, total credit hours, credit hours for quantitative research, credit hours for qualitative research, current job, pre-research experience, satisfaction

for their research training experience, and weekly spent hours doing research were 3.04, 54.15, 6.12, 4.20, 2.18, 2.21, 3.08, and 9.23 (SD = 1.46, 33.16, 4.17, 3.42, .68, 1.13, 1.15, and 8.40 respectively).

Table 27

Means and Standard Deviations for Eight Auxiliary Variables and SAS

	M	SD
RA	19.05	6.07
Number of Years in Program	3.04	1.46
Total Credit Hours Completed	54.15	33.16
Quantitative Research Completed	6.12	4.17
Qualitative Research Completed	4.20	3.42
Number of Current Jobs	2.18	.68
Pre-Research Experience	2.21	1.13
Satisfaction with Overall Research Training	3.08	1.15
Weekly Hours Spent Doing Research	9.23	8.40

A standard multiple regression analysis was performed between the auxiliary variables as independent variables and RA as the dependent variable. Preliminary analyses were performed to evaluate primary assumptions. No violations of those assumptions were identified. The results indicated that 20.52% of variance (R^2 = .2052, p < .01) in RA was accounted for by all the eight auxiliary variables (see Table 28). In addition, number of years in program, quantitative research completed, qualitative research completed, pre-research experience, and weekly hours spent doing research showed significant predictability of research activity (β = -.28, p < .01; β = .23, p < .01; β = .17, p < .05; β = .25, p <.01; and β = .13, p < .05 respectively). Among those significant predictors, number of years in program showed the most effect (β = -.28, p < .01), negatively; then pre-research experience was the strongest predictor (β = .25, p < .01), positively; then quantitative research completed (β = .23, p < .01), positively; then qualitative

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research completed ($\beta = .17$, $p < .01$), positively; and finally weekly hours spent doing research ($\beta = .13$, $p < .05$). The remaining three variables were not significant; total credit hours completed, number of current jobs, and satisfaction with research training.

In addition, the semi-partial regression coefficient (sr) associated with each of these the significant regression weight showed that the given independent variable in the multiple regression analysis explained a specific portion of variance (sr^2) in the outcome variable. Among the significant independent variables such as the number of years in program; credit hours completed in quantitative research; credit hours completed in qualitative research; pre-research experience; and weekly hours spent doing research, the semi-partial correlation for pre-research experience explained the largest portion 6.25% of variance in their *SAS* scores; then, the number of years in program 4.0%; credit hours completed in quantitative research, 3.61%; credit hours completed in qualitative research, 1.96%; and weekly hours spent doing research, 1.69% (see Table 28). The results indicated that students' pre-research experience contributed to most of the variance, while number of years in the program, quantitative research completed, and credit hours completed in qualitative research contributed to the amount of the variance in students' research activity.

Table 28

Multiple Regression Analysis for SAS Scores for Eight Auxiliary Variables

		B	β	Semi-partial(sr.)
Model 1	Number of Years in Program	-1.16**	-.28**	.20**
	Total Credit Hours Completed	.01	.07	.05
	Quantitative Research Completed	.33**	.23**	.19**
	Qualitative Research Completed	.29*	.17*	.14*
	Number of Current Jobs	-1.10	-.12	-.12
	Pre-Research Experience	1.36**	.25**	.25**
	Satisfaction with Research Training	-.40	-.08	-.07
	Weekly Hours Spent Doing Research	.10*	.13*	.13*

Note: **$p \leq .05$; *$p < .01$; $R^2 = .21$, $R = .453$

Summary of the Findings of Research Questions and Hypotheses

Seven research questions and hypotheses were developed and answered through the present study. For the research question 1, the results of the PCA indicated that the *RIFPQ-R* with 14 items supports a three factor component solution; Commitment, Salience, and Exploration, with 55.21 % of the total variance explained the researcher identity formation process and the overall Cronbach's Alpha of the *RIFPQ-R* was .83. For the research question 2, Pearson's coefficients indicated significant relationships between counseling doctoral students' *RIFPQ-R* overall and subscale scores (i.e., Exploration and Salience) and their *RTES-SR* overall and subscale scores (i.e., Interpersonal and Instructional). For the *RIFPQ-R* subscale Commitment and *RTES-SR* subscale Interpersonal, no significant relationship was found. For research question 3, Pearson's coefficients were significant between doctoral students' *RIFPQ-R* overall and subscales (i.e., commitment, salience) and their *SAS* scores. No significant relationship was found for counseling doctoral students' *RIFPQ-R* Exploration subscale scores and their SAS scores. For research question 4, Pearson's coefficients showed no significant relationships between counseling doctoral students' *RTES-RS* overall and subscales scores to their *SAS* scores. For the research question 5, a multiple regression analysis indicated that the overall regression equation with eight auxiliary variables predicted counseling doctoral students' *RIFPQ-R* scores with three auxiliary variables; number of credit hours completed in qualitative research, pre-research experience, and number of years in program for a total of 17% of the variance. For research question 6, a multiple regression analysis indicated that the overall regression equation did not predict counseling doctoral students' *RTES-SR*, with number of current jobs explaining only 2.6% of variance. For research question 7, a multiple regression analysis indicated that out of eight auxiliary variables, five auxiliary variables (i.e., number of

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years in program, quantitative research completed, qualitative research completed, pre-research experience, and weekly hours spent doing research) explained 17.3% of variance in doctoral students' *SAS* scores.

Discussion Quantitative

This chapter briefly reviews the present study. Subsequently, all seven research

questions are summarized and discussed in relation to the results of relevant statistical analyses

as well as previous literature. In addition, implications for the general audience and counselor

educators as well as limitations of the study are provided. Lastly, future recommendations and

conclusions about the present study are drawn.

Introduction

In recent years, counselor educators have expressed concerns regarding research-training

outcomes of counseling graduate students, as demonstrated by low research productivity and

lack of interest in counseling research (Betz, 1997; Gelso & Lent, 2000; Gelso, Mallinckrodt, &

Judge, 1996; Hollingsworth & Fassinger, 2002). In an effort to address these concerns,

counselor educators have made various attempts to examine potential contributions to research

outcomes of counseling graduate students by searching for alternative research training strategies

(e.g., Brown, et al., 1996; Lambie & Vaccaro, 2011; Phillips & Russell, 1994; Royalty, Gelso,

Mallinckrodt, & Garrett, 1986). Additionally, environmental issues and personal factors have

been examined as contributors to research training outcomes among counseling doctoral students

(e.g., Brown et al., 1996; Gelso, 2006; Phillips & Russell, 1994). As part of their efforts to

examine possible contributors to and explanation of predictors to research training outcomes

with counseling doctoral students, Kahn and Scott (1997) designed predictive scholarly activity

model in which scholarly activity predicted several variables either directly or indirectly. The

variables included research training environment, relationship with mentors, number of years

enrolled in a doctoral program, investigative interests in research, research outcome expectations,

research self-efficacy, and research interests. In a more recent study, personal and environmental factors explained 17% of the variance in scholarly activity among counseling graduate students (Kahn, 2001). The purpose of the present study was to examine the relationships among research training environment, researcher identity formation process, and research activity of counseling doctoral students.

Research Findings Related to Literature

Overall, most of the research hypotheses in this study were supported, and the findings of the study were consistent with previous studies. In line with those previous studies (e.g., Brown et al., 1996; Gelso, 2006; Phillips & Russell, 1994), the present study provides empirical evidence supporting environmental and personal factors that contribute to counseling doctoral students' research identities.

Psychometric properties of the RIFPQ-R. Primarily in the present study, reliability and validity of the *RIFPQ-R,* which was used to examine counseling doctoral students' researcher identity formation, was examined. Using a principal component analysis (PCA) via promax rotation, three factors in the *RIFPQ-R*, *Exploration*, *Commitment*, and *Salience* were validated. The psychometric properties of the *RIFPQ-R* were found to be adequate for the measurement of counseling doctoral students' researcher identity formation process. Cronbach's alpha was .83, supporting the reliability of the *RIFPQ-R* and the three factor component loadings ranged from .44 to .86, with over 50% of the variance explained. The results suggested that counseling doctoral students' researcher identity formation process is consistent with the three factors of Exploration, Commitment, and Salience measured by the *RIFPQ-R*.

Counseling doctoral students: Researcher identity, environment, activity, and SCT.

Researcher identity and training environment. Significant associations between counseling doctoral students' researcher identity formation process and their research training environment was found; however the strength of all of the relationships were weak, .25 or less. In those findings, significant associations were indicated between students' overall perceptions of doctoral students' research training environment and both interpersonal and instructional to their overall perceptions of their researcher identity. Particularly, counseling doctoral students' exploration, commitment, and salience to activate their researcher identity significantly correlated with their overall perceptions of their training environment. For the instructional aspects of their research training environment, exploration $(< .01)$, commitment $(< .01)$, and salience $(< .05)$ were significantly correlated. Whereas, for interpersonal, exploration and commitment significantly correlated $(< .05)$; however, commitment was not significantly related.

Although the correlational data cannot establish causality and the relationships were weak in the present study, the results did indicate that counseling doctoral students' perceptions of their training environment may have some influence on students' researcher identity formation. The findings from the present study was consistent with two aspects from Gelso, Mallinckrodt, and Judge's theory (1996), which proposed that training environment promotes students involvement in research because the environment motivates students to explore their possible identities, particularly counseling research-related identity (i.e., exploration), and that students' researcher identity is salient when activating their researcher role when involved in research-related tasks (i.e., salience). The third aspect of Gelso, Mallinckrodt, and Judge's theory that proposed students' commitment to the research training process was related to their environment (i.e., commitment) was not supported in the present study.

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Researcher identity and activity. The correlation findings from the present study showed significant relationships between counseling doctoral students' overall researcher identity formation ($< .01$), as well as their commitment ($< .01$) and salience ($< .05$) to students' perceptions of their research activities, but not to their exploration of researcher role. However, all of the correlations were weak, .18 or lower. The results suggest that while students are exploring possible professional researcher identities, they do not perceive that they are actively involved in research. However, once students make a commitment to their researcher identity as counseling researchers, they perceive that they are more actively involved in research activities, making their researcher identity salient.

The present research results are consistent with the findings of the recent empirical study that examined the association between medical students' identity as physicians and their performance in medical training (Brunstein & Gollwitzer, 1996). In their study, after identity relevant training occurred, medical students performed significantly better on a test relevant to their identity as physicians rather than on a test irrelevant to their identity. Those findings indicated that the medical training relevant to students' physician identity enhanced their performance on their identity-related job tasks. In addition, as proposed by numerous counselor educators and scholars who stated that enhancing counseling students' identity as researchers might assist students in engaging actively in research (e.g., Benishek & Chessler, 2005; Crossouard & Pryor, 2008; Hall & Burns, 2009), similar to the findings in the present study, students who were more committed to research had more salient research identities and perceived that they were more active in research.

Research training environment and activity. For the present study, no significant relationships were found between counseling doctoral students' perceptions of their research

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training environment and their research activity, which was consistent with previous studies. The results from the present study indicated that students' training environment was a negative relationship with their research activity, but a weak relationship and insignificant.

Social cognitive theory. Consistent with Bandura's SCT (1986, 1989b), the finding of the present study indicated that a bidirectional interaction occurs between counseling doctoral students' researcher identity and their perceptions of their research training environments and activities. According to Bandura, the interactional process within an environment influences students (person) by providing verbal or nonverbal feedback. In response to the feedback exchange within the environment, students develop and modify their identities as they change their cognitions about their behaviors. When framing the results of the present study in Bandura's SCT (1978, 1986) to understand the relationships among counseling doctoral students' researcher identity and their perceptions of their training environment and research activity; the present study indicated that counseling doctoral students' perceptions of their researcher identity was employed as a personal factor, their training environment represented as a social factor, and their research activity as a behavioral factor.

Overall, the results of the present study indicated that two of the three variables (i.e., researcher identity, research training environment, and research activity) were associated with each other, indicating that these relationships may interact with each other either directly or indirectly, which is similar to Bandura's SCT (1986). However, as noted in the figure, each of the three interactions do not have the same strength in the triad when influencing or causing the interactions (see Figure 5). Rather, the strength of each interaction was different depending on the counseling doctoral students' researcher identity and their training environment and research activity in which the students interacted in their graduate programs. In addition, an insignificant

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relationship was indicated between students' research training environment and research activities in contrast with previous studies (Kahn & Scott, 1997; Kahn, 2001), which indicated that students' research training environment does indirectly influence their research activities through other factors; such as research self-efficacy and research interest.

   Demographics related to RIFP, RTE, and RA. Counseling doctoral students' perceptions of their researcher identity, activity, and training environment were analyzed with eight student demographics (i.e., number of years in program, total credit hours completed in program, number of credit hours in quantitative research completed, number of credit hours in qualitative research completed, number of current jobs, pre-research experience, satisfaction with overall research training experience, and weekly hours spent doing research). Overall, out of the eight student demographics; three demographics accounted for 17% of the variance for students' researcher identity, five variables accounted for 21% of the variance for students research activity, and one variable accounted for 5% of the variance for students' research training environment (see Figure 5),.

   Researcher identity and activity. The number of years counseling doctoral students were enrolled in their program, the number of credit hours completed in qualitative research, and their pre-research experience had a slight prediction on both students' researcher identity and activity.

   The number of years enrolled in their program varied with the highest number of students reporting three years enrolled in their program and the lowest number of students reporting six years. For both researcher identity and activity, the number of years students were enrolled in their program was significantly associated with their researcher identity and activity ($\beta = -.20$, $\beta = -.28$, respectively), but the relationships were weak, with only a small portion of the variance in students' researcher identity (1.96%) and activity (4.00%) explained (see Figure 5). Given the

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weak relationship, the findings did indicate the possibility that the longer a student stayed in a program, the weaker their researcher identity became and the less students participated in research activities. Previous research by Kahn and Scott (1998) indicated that 23% of variance in students' research activity was accounted for by the number of years students were enrolled in their program.

The number of credit hours completed in qualitative research varied from no hours to 22 hours, with the highest number of students reporting 22 credit hours completed in qualitative research and the lowest number of students reporting no credit hours. For students' researcher identity and activity, the number of credit hours students completed in qualitative research were significant (β = .22, β = .23, respectively), but the relationships were weak, with only a small portion of the variance in students' researcher identity (3.20%) and researcher activity (2.00%) explained (see Figure 5). Given the significant but weak relationship, the findings did indicate the possibility that the more credit hours students complete in qualitative research, the more actively they may get engaged in their researcher identity and research activity.

Counseling doctoral students' pre-research experience varied across one year to five years of experience, with the highest number of students reporting five years and the lowest number of students reporting one year. For students' researcher identity and activity, research experience before entering their doctoral programs was significant (β = .28, β = .25, respectively), but, the associations were weak, with only a small portion of the variance in students' researcher identity (7.29%) and researcher activity (6.25%) explained (see Figure 5). Given the significant but weak relationship with students' pre-research experience, the findings did indicate the possibility that the more research experience students have before entering their

programs, the more actively they may be engaged in their researcher identity and research activity.

Research activity. The number of credit hours completed in quantitative research and the weekly hours spent doing research had a slight prediction on counseling doctoral students research activity.

The number of credit hours in quantitative research completed varied from no hours to 30 hours, with the highest number of students reporting 30 credit hours completed and the lowest number of students reporting no credit hours completed. Students identifying with more hours completed in quantitative research showed a significant relationship with research activity (β = .23), but the relationship was weak, with only 3.61% of variance explained (see Figure 5). Given the weak relationship, the findings did indicate the possibility that the more credit hours students complete in quantitative research, the more actively they may engage in their researcher identity formation process and research activities.

The weekly hours spent doing research varied across a range from no hours to 50 hours a week. Students who reported more hours spent doing research showed more active involvement in their researcher identity and were more active in research. For research activity, students who spent weekly hours doing research indicated a significant association with their research activity (β = .13), but the association was weak, with only a small portion of the variance (1.70%) explained (see Figure 5). Given the weak relationship, the findings did indicate the possibility that the more hours students did research weekly, the more active they were in research.

Research environment. The number of current jobs held had a slight prediction on counseling doctoral students' research environment. In the analysis, students' number of current jobs varied across one job to three jobs, with the highest number of students reporting three

current jobs and the lowest number of students reporting one job. For environment, the number

of current jobs indicated a significant association (β = .17), but the association was weak, with

only 2.56% of the variance explained (see Figure 5). Given the weak relationship, the findings

did indicate the possibility that the more jobs students hold the more positive perceptions

students have about their research environment.

Figure 5

Counseling Doctoral Students' RI, RE, and RA Framed in SCT and Demographics
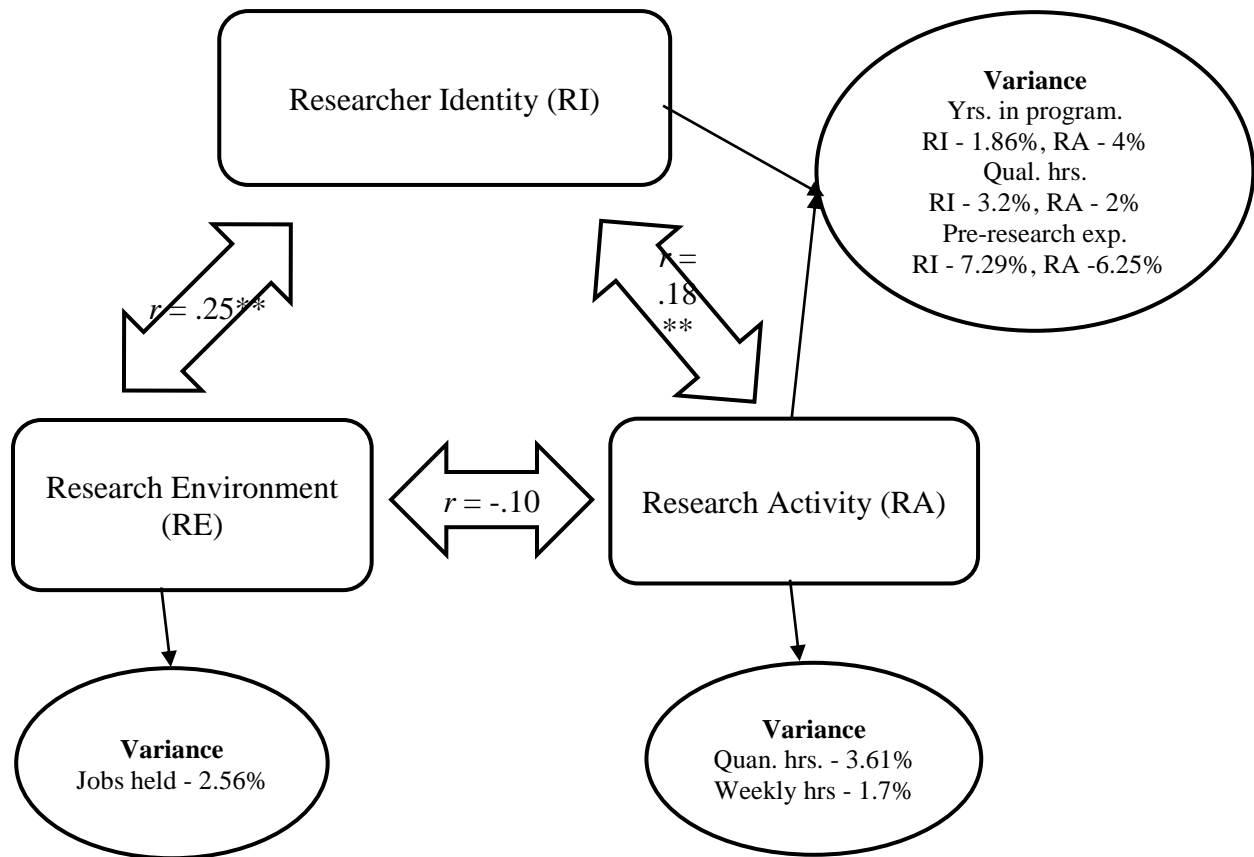
Note. **≤ .01; Yrs. in program = Number of years students' enrolled in program, Qual. Hrs. = Number of credit hours completed in qualitative research, Pre-research exp. = Number of years or experience doing research, Quan. Hrs. = Number of credit hours completed in quantitative research, Weekly hrs. = Number of weekly hours doing research, Jobs held = Number of jobs held during enrollment in program.

<center>**Implications**</center>

Implications for General Audience

As noted in the findings of the present study, the result suggests that counseling doctoral students' research training environment may influence the process of their identity formation as researchers. This finding implies that it may be beneficial for prospective and current counseling doctoral students who value research training to explore the research training environment of programs that they are considering for future study. Students' research training can raise expectations for the "right" training environment that can yield high levels of research activity. At the same time, as found in this study, students also need to consider personal variables (e.g., researcher identity formation) that they bring to their research training environment. The findings of the present study suggest that counseling doctoral students' personal variables, such as researcher identity, influence their research activity and their perceptions of research training environment. In addition, research experience before admission to a doctoral program also appeared to influence doctoral students' research activity and their researcher identity formation process. The findings imply that counseling doctoral students' research experience before admission to a counseling doctoral program appear to help students build their researcher identity and more actively engage in research activity during their doctoral graduate training.

Implications for Counselor Educators

From a program perspective, the results of the present study offer some encouragement for faculty to exert active environmental efforts to enhance counseling doctoral students' identity development as researchers, improve students' perceptions of their research training environments, and foster greater research activity for students. The results suggest that research training environments may improve students' research performance through facilitating

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counseling doctoral students' researcher identity. Also, the findings imply that it may be helpful for faculty in counseling programs to consider specific ways in which they, individually and collectively, could enhance student researcher identity formation within their research and program training environments. Faculty members could mentor students early on in students' career interests in academia to help develop students' research agendas throughout their enrollment in counseling programs. For example, helping doctoral students organize and direct their own research team that would comprise of graduate master's students and graduate doctoral peers to provide opportunities for doctoral students to develop their researcher identity and self-efficacy as well as specific research skills as future researchers (Dufrene & Paradise, 2010). By doing so, it may be useful for counselor educators and graduate students to gain a better understanding of doctoral students' identity formation as researchers, which could be relevant to their research training outcomes and their future as researchers.

The results of the present study provided empirical evidence that counseling doctoral students' researcher identity may influence their research activities. The present findings may fill the gap between the current research and the previous studies on personal factors that contribute to research activity. According to the results of the previous studies (Finkelstein, Penner, & Brannick, 2005; Penner & Finkelstein, 1998; Videka, 1979) and the present study, researcher identity process may promote research-related activities among counseling doctoral students. An implication of these findings is that through doctoral students' engagement in research activity, students may embrace researcher roles that are relevant to research performance and activities (Callero, 1985; Charng, Piliavin, & Callero1988; Piliavin & Callero 1991). Furthermore, once doctoral students' researcher identities have been adopted, a desire to validate student role-identity within their research training environment prompts repeated

research-related activity over time by increasing hours spent doing research-related activities on a weekly basis (Finkelstein et al., 2005; Grube & Piliavin, 2000).

Future Research

This study has several research suggestions for counselor education. First, the present research offers a conceptual bridge linking two areas, the research training environment and researcher identity development, which had not been previously combined empirically. Research shows especially within Bandura's SCT that linking these two areas is critically important for understanding students' research training process. Additionally, the extent of the sampling in this study supports the generalizability of these findings to doctoral students in counselor education. However, further research needs to replicate with a bigger sample size and refine the *RIFPQ-R* or additional instruments that could be used to assess students' researcher identity formation process. Few attempts have been made to create comparable measures of researcher identity in academic settings. Additional research could further validate the *RIFPQ-R* by utilizing a confirmatory factor analysis or structural equation modeling. Moreover, further research needs to explore the role of researcher identity in the research training environment and its contribution to the role of counseling doctoral students' research activity.

In addition, the research results in the present study indicated that further inquiry is needed into doctoral students' researcher identities in relation to the predictive scholarly activity model. Future studies should investigate the researcher identity formation using Kahn and Scott's (1997) predictive scholarly activity model. Researcher identity formation, qualitative and quantitative research courses, pre-research experience, and hours spent doing research-related activities could further explain 83% variance that was unexplained in the predictive scholarly activity model (Kahn, 2001; Kahn & Scott, 1997). Also, counseling doctoral students' research

training environments had no significant direct relationship with students' research activity but a strong relationship with students' researcher identity. These findings suggest that students' researcher identity may mediate the relation between students' research training environment and their research activity. Further study is needed to identify the potential relationships.

Limitations

Several limitations should be considered when interpreting the present study results. First, the data collection was cross-sectional. Thus, counseling doctoral students' perceptions of research training environment and their researcher identity formation were based on students' recollections, which may easily be blurred by current psychological and circumstantial experiences. Relying on cross-sectional data provides only a brief snapshot of students' research training experiences, which may result in omission of important information. A future study that incorporates a longitudinal design could address some of these concerns. Second, the measures used in the present study relied solely on self-report by student participants. The data did not corroborate students' perceptions of their researcher identity formation, research raining environment, research activities with other additional resources such as faculty perceptions. Additional research from paired observations of student and faculty responses to students' researcher identity development could contribute to future research.

Furthermore, the present study design and accompanying analyses assumed independence among respondents. Despite random sampling of research training programs, clusters of respondents were enrolled in the same doctoral program and shared the same research training environment. Consequently, one might find some homogeneity within clusters based on students having met similar admission criteria and selecting the same research training program environment (Kish, 1965). Lack of independence may have magnified the relationships between

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variables used in the present study. This problem could be corrected by conducting analyses at the program level; however, the sample size in this study was insufficient to conduct this type of analysis.

Conclusions

Using a predictive model of doctoral student scholarly activity(Kahn, 2001), the present study examined counseling doctoral students' formation of their researcher identity as a personal factor as well as its relation to their research activity and perceptions of their research training environment. Research activity refers to scholarly activity in the present study. Students' researcher identity formation process correlated significantly with their research activity and their perceptions of their research training environment. As a personal factor, counseling doctoral students' identity formation as a researcher was found to be directly but weakly related to their research activity and research training environment. In addition, students' research experiences before admission to program, number of credit hours completed in qualitative research, and number of years enrolled in their program directly predicted their reported research activities and researcher identity formation process. As a result, the findings of the present study suggest that the research training environment facilitates counseling doctoral students' identity formation process as a researcher and their firm sense of researcher identity which enhances students' research training environment.

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34-Initial Item Pool

Areas	Research	Items and Item Numbers
Exploration		
Career (goals & opportunity)	Marcia, 1966 Luyckx et al., 2008 Meeus, Iedema, & Vollebergh, 1999	1. I often think about the career path I want to take in relation to my future research activities after graduation. 2. I often think about how I myself see my future career life as a counseling researcher. 3. I often think about my future job opportunities as a counseling researcher after my graduation. 4. I often think about what to do with my future career as a counselor educator in the field of counseling research.
Ideology (beliefs, values)	Waterman, 1982 Meeus, Iedema, & Maassen, 2002	5. I keep trying to figure out if the lifestyle of living as a counseling researcher would suite me in terms of my life goal and purposes in general. 6. I often think about the potential internal rewards such as self-achievement and meaningfulness that the future career as a counseling researcher may bring into my life.
Status (rewards & supports)	McCall & Simmons, 1966	7. I often think about how my choice of becoming a counseling researcher in counselor education may match with my overall life purposes or life styles. 8. I often talk with other people such as friends, peers, faculty, advisors, or family about the future research related career goals I have made. 9. I often talk about what other people (such as friends, peers, faculty, advisor/chair, or family) think about the research related career path I want to take in my future life. 10. I often think about the future potential rewards associated with what I may do in my future research related activities. (e. g., promotion, money, favors, prestige or the necessities of life itself, etc.)
Commitment		
	Stryker & Serpe, 1982; McCall & Simmons, 1966 Stryker & Serpe, 1982	1. I am joining professional organizations for my professional development including my research skills. 2. Every year, I attend the professional conferences and go to some sessions related to my research interests or research methodological issues. 4. As part of my research related experiences, I know many people through extra-curricular activities (e.g., research related web bloggers, web research forum participants, or statistics instructors whose workshops I attended for

	Owen & Serpe, 1982; 2003	new research skills in the past). 5. I devote enough time working on proposals for calls for those professional conferences mentioned above as a primary presenter or co-presenter. 6. I have somewhat regular schedules or consistent amount of weekly hours devoted for research related activities such as literature reviews, internet search, and studying statistics and learning new data analysis methods. 7. I often spend time navigating on line in order to get information about grant writings and funding resources for my future research interests. 8. I often visit certain specific web sites in order to update or renew knowledge along with research methodological issues and to enhance research skills.
Interpersonal connect to counter role takers	Stryker & Serpe, 1982; McCall & Simmons, 1966 Stryker & Serpe, 1982 Stryker & Serpe, 1982; McCall & Simmons, 1966 Stryker & Serpe, 1982 Stryker & Serpe, 1982	9. I would feel very resentful if I lost contact with those people known through all sorts of my research related activities when I chose not to do research in my future career. 10. Besides the curricular activities, I know many researchers on a first name basis through my extra-curricular research related activities such as online listserve subscriptions, or research related web blogs as well as ACA, ACES, APA, and other counseling professional organizations. 11. The target population of my research inquiry is very important to me. They are the prospective ultimate beneficiaries from my research findings. 12. The professional organizations that I am joining are very important to me regarding my research interests and activity. 13. The people who I came to know through those professional organizations that I am joining are very important to me. 14. I consider very important such recreational activities that I engage in with those people all above (other than research). For example, lunch, coffee-break talk, shopping, and tour, etc. 15. It is very important that I participate in these activities with the people known through all sorts of my research related activities mentioned above.
Salience		
	Stryker & Serpe, 1982 McCall & Simmons, 1966	1. Supposedly, I have this upcoming weekend and am free from any specific tasks or immediate demands for the weekend. Then, I would choose to do something related to my current research interests rather than other options such as going on an outing/visiting my family or friends; catching up on work; and spending time with my spouse or significant others, so on. 2. I often need to encourage myself for more active research related activities and be positive about my research competence. Other times, I need social

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supports from others around me at school and home for my research efficacy.

3. I often feel like or perceive that I need or want some intrinsic rewards associated with my research related activities including research training (e.g., the sheer sense of efficacy in my having done research related activities or performance with reasonable competence).

4. In addition to direct human services, part of my compassion   possessed as helping professional has been channeled toward enhancing my research competence and matching my research interests with my future career and life goal.

5. I am positive with potential career options and opportunities that I may obtain various kinds and amounts of social reward on my future research related activities in the present circumstances (e.g., job security, descent life, promotion, prestige or self-actualization including social justice and advocacy if any).

Situation-Specific Questions 7 ~ 9: Supposedly, you are attending an annual conference in the counseling-related field.

6. After registration at the conference site, you would first look for or pay your primary attention to the conference program schedules to see if there are any interesting presentations on that day. One of your searches for education sessions to attend definitely will be something related to your research interests and/or research methodology.

7. Now, you are having a meeting with new people for the first time at the conference. You want tell them about yourself so that they will really know you, but you can only tell them one thing about yourself. Then, you would choose to tell them about your current research related activities or your research interests rather than other possible options such as your clinical experiences that makes you feel proud of yourself; being a husband or wife or a parent; your graduate experience in general; or something else.

8. Meanwhile, you have a chance to choose one person only to have lunch with during the conference. Then, you would choose a prominent scholar who has presented something relating to your current research interest rather than those other available options as following:
a) A popular speaker addressing issues with currently "hot topic" at the conference;
b) A person who can provide with tactic strategies and useful information for "graduate success;"
c) An alumnus who is helpful for your social and professional network in relation to "your future job search;"
d) A leading professional in the field of practice who has just presented a "new and innovative intervention technique."

Appendix B

Approval Letter for Pilot Study from UNO Internal Review Board

**University Committee for the Protection
of Human Subjects in Research
University of New Orleans**

Campus Correspondence

Principal Investigator: Kimberly Mason

Co-Investigator: Heesook Lee

Date: September 25, 2009

Protocol Title: "Researcher Identity Formation Process"

IRB#:   09Oct09

The IRB has deemed that the research and procedures described in this protocol application are exempt from federal regulations under 45 CFR 46.101category 1, due to the fact that all data will be collected and recorded anonymously.

Exempt protocols do not have an expiration date; however, if there are any changes made to this protocol that may cause it to be no longer exempt from CFR 46, the IRB requires another standard application from the investigator(s) which should provide the same information that is in this application with changes that may have changed the exempt status.

If an adverse, unforeseen event occurs (e.g., physical, social, or emotional harm), you are required to inform the IRB as soon as possible after the event.

Best wishes on your project.
Sincerely,

Robert D. Laird, Ph.D., Chair
UNO Committee for the Protection of Human Subjects in Research

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Appendix C

Researcher Identity Formation Process Questionnaire-Revised (RIFPQ-R)

Please note that when "RESEARCH ACTIVITIES" is used in this survey, it includes the following: "designing and executing research projects, preparing manuscripts of a theoretical nature or a critical review of literature, conducting program evaluations or needs assessments, presenting at professional conferences, participating as a member of a research team engaged in any of the above activities, and advising research projects of others" (Kahn & Miller, 2000). In addition, "RESEARCH ACTIVITIES" refer to any activities directly or indirectly related to research including studying statistics, reviewing literature, learning new data analysis software, participating in web discussion forums on research, etc.

Below is a series of statements concerning research training experiences. Please respond to the following statements in terms of your doctoral research training experiences in which you are currently receiving your graduate training. It is important to answer each item, even if some of the items are difficult to answer. Consider each statement using the following scale:

1	2	3	4	5
Least Like Me	*Slightly Like Me*	*Moderately Like Me*	*Very Like Me*	*Most Like Me*

1. I often think about my future career path associated with potential job opportunities in the field of counseling.
2. I often think about the potential internal rewards (e.g., self- achievement or meaningfulness) associated with my future career choice in the counseling field.
3. I often think about how my choice of becoming a counselor educator will match with my life purposes.
4. I often talk with other people such as friends, peers, faculty or family about my potential career path that I want to take in the field of counseling after graduation.
5. I often think about the potential external rewards (e. g., promotion, money, favors, prestige or the necessities of life itself, etc.) associated of my future career choice in the counseling field.
6. I know many researchers relevant to my research interests or research through extra-curricular activities (e.g., web research discussion forum participation, stat workshop or professional organization activities).
7. I have regular study schedules or consistent amount of hours for activities relevant to my research.
8. I have put a great deal of time, energy and resources to become the kind of researcher who I would like to be in the future.
9. I would feel very resentful if I lost contact with those people known through my research training experiences and relevant activities due to any career shifts I make that are not related to research.
10. I know many researchers on a first name basis through my research training experiences through regular/extracurricular research related activities such as coursework, stat workshop, or any professional organization).
11. I feel strongly connected to the target population associated with my current research interests or my future research.
12. I feel professional organizations that I have joined are so important for my research interests or future research activities.
13. I am definitely on the right track in terms of becoming the kind of researcher who I would like to be in the future.
14. At a meeting with new people for the first time at an annual counseling conference, if I have to tell them only ONE thing about myself, I definitely would first tell them about my current research interests rather than other topics such as my clinical experiences or personal life.
15. I greatly enjoy doing research or any research related activities for free time.
16. My research related activities and the relevant research outcomes greatly impact my self-esteem.
17. Others view me very positively in terms of reaching the kind of researcher I would like to be in the future.

Appendix D

Research Training Environment Scale-Short Revised (RTES-SR)

Kahn, J. H., & Miller, S. A. (2000). Measuring global perceptions of the research training environment using a short form of the RTES-R. *Measurement and Evaluation in Counseling and Development*, *33*, 103-199.

Below is a series of statements concerning research training:

Please note that we define research broadly. "Research" when used in this survey includes the following types of activities: designing and executing research projects, preparing manuscripts of a theoretical nature or a critical review of literature, conducting program evaluations or needs assessments, making presentations at professional conferences, participating as a member of a research team engaged in any of the above activities, and advising the research projects of others.

Please respond to the following statements in terms of the doctoral program in which you are currently receiving your training. (Note: If you are currently on internship, please rate the graduate program in which you were previously trained.) It is important to answer each item, even if some of the items are difficult to answer. Consider each statement using the following scale:

1	2	3	4	5
Disagree	*Somewhat Disagree*	*Neutral*	*Somewhat Agree*	*Agree*

1. Many of our faculty do not seem to be very interested in doing research.
2. The faculty does what it can to make research requirements such as the thesis and dissertation as rewarding as possible.
3. My advisor understands and accepts that any piece of research will have its methodological problems.
4. I have felt encouraged during my training to find and follow my own scholarly interests.
5. Statistics courses here are taught in a way that is insensitive to students' level of development as researchers.
6. The statistics courses we take do a good job, in general, of showing students how statistics are actually used in psychological research.
7. There is a sense around here that being on a research team can be fun, as well as intellectually stimulating.
8. Faculty members in my program use an extremely narrow range of research methodologies.
9. Generally, students in my training program do not seem to have intellectually stimulating and interpersonally rewarding relationships with their research advisors.
10. It is unusual for first-year students in this program to collaborate with advanced students or faculty on research projects.
11. I have the feeling, based on my training, that my thesis (or dissertation) needs to be completely original and revolutionary for it to be acceptable to the faculty.
12. Our faculty seems interested in understanding and teaching how research can be related to counseling practice.
13. Most faculty do not seem to really care if students are genuinely interested in research.
14. During our coursework, graduate students are taught a wide range of research methodologies, e.g., field, laboratory, survey approaches.
15. Students in our program feel that their personal research ideas are squashed during the process of collaborating with faculty members, so that the finished project no longer resembles the student's original idea.
16. Students here seem to get involved in thinking about research from the moment they enter the program.
17. Students in this program are rarely taught to use research findings to inform their work with clients.
18. The faculty members of my graduate program show excitement about research and scholarly activities.

Appendix E

Scholarly Activity Scale (SAS)

Kahn, J. H., & Scott, N. A. (1997). Predictors of research productivity and science-related career goals among counseling psychology graduate students. *The Counseling Psychologist, 25*, 38-67.

The following items assess research accomplishments and current involvement in research activities. Please answer the following questions based on your past and current research involvement.

1. How many published manuscripts (either empirical or otherwise) have you authored or coauthored in a refereed journal (include manuscripts in press)?

2. How many unpublished empirical manuscripts have you authored or coauthored (not including your thesis or dissertation)?

3. How many articles have you submitted to refereed journals?

4. How many manuscripts are you currently in the process of preparing to submit for publication (i.e., writing the manuscript)?

5. How many presentations have you made at local, regional, or national conventions?

6. How many presentations are you currently in the process of preparing to submit for presentation (i.e., writing an abstract)?

7. How many local, regional, or national research conventions have you attended?

8. Are you currently involved in gathering data (do not include your thesis or dissertation)?

9. Are you currently conducting statistical analyses on data (do not include your thesis or dissertation)?

Appendix F

Background Information Questionnaire-Revised (BIQ-R)

1. Ethnicity:
      Caucasian
      African-American
      Latin/Hispanic
      American Native/American Indian
      Asian
      Multiracial
      Others

2. Gender: Female   Male

3. Age:

4. Is your current doctoral program CACREP-accredited?

   Yes
    No (Please specify _____)

5. Is your current doctoral program a cohort program?

   Yes
    No

6. Please prioritize from *first* through *fifth*, the future career goals that you had at the time of admission to your doctoral program.

      Private Practitioner
      Clinical Supervisor
      Professorship
      Researcher
      Other (Please specify _____)

7. What year are you in your doctoral program?

      First   Second   Third   Fourth   Fifth   Sixth or longer

8. How many credit hours have you completed in your doctoral program?

9. How many credit hours have you completed in *qualitative* research?

10. How many credit hours have you completed in *quantitative* research?

11. Have you always been enrolled in your current doctoral program as a full-time student?

Yes   No

12. How many leave of absences have you taken in your doctoral program?

None   1   2   3   4 or more

13. How many jobs do you currently hold including part-time and full-time?
None
One full-time
Two full-time or more
One part-time
Two part-time or more

14. How much were you involved in research before entering your doctoral program?

1	2	3	4	5
Never	*Rarely*	*Sometimes*	*Often*	*Very Often*

15. How satisfied are you with your overall research training in your doctoral program?

1	2	3	4	5
Not at all	*Somewhat*	*Moderately*	*Strongly*	*Completely*
Satisfied	*Satisfied*	*Satisfied*	*Satisfied*	*Satisfied*

16. How many hours do you spend doing any type of research related activities per week?

Appendix G

Copyright Permission Letter

Re: Request for permission to use your instruments:RET-S and SAS

Jeffrey Kahn [jhkahn@ilstu.edu]
Sent: Wednesday, March 06, 2013 9:58 AM
To: Heesook Lee

Hi Heesook,

Yes, you have my permission. The current versions of these instruments can be accessed on my web page:
http://my.ilstu.edu/~jhkahn/

Please let me know how your research turns out. Best of luck.

JK

On 3/6/2013 9:21 AM, Heesook Lee wrote:

> Good morning! Dr. Kahn,
>
> I'm a doctoral candidate in counselor education at University of New Orleans.
>
> I am emailing you to request permission to use those of your instruments for my dissertation. The topic for the dissertation is the following: Examining the relations among research training environment(RET-S), researcher-identity and research activity (Scholarly Activity Scale).
>
> I have requested you for permission a few years ago, however, I happened to have to take a leave of absence from the program afterwards. Now I'm back to complete the study and I'm asking you for your permission again since it's been so long after your initial permission.
>
> Thank you very much in advance for your thoughtful consideration in advance!
>
> Heesook Lee
>
> P.S.: As far as recalling our previous email correspondence, you seemed to be revising the instrument(8) for SEM.
> If so, then could you please let me know how to get the revised? Thanks again !

```
--
Jeffrey H. Kahn, Ph.D.
Department of Psychology
Campus Box 4620
Illinois State University
Normal, Illinois USA  61790-4620
voice: (309) 438-7939
fax: (309) 438-5789
email: jhkahn@illinoisstate.edu
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Appendix H

Approval Letters for Main Study from UNO Internal Review Board

**University Committee for the Protection
of Human Subjects in Research
University of New Orleans**

Campus Correspondence

Principal Investigator:	Zarus E.Watson
Co-Investigator:	Roxane L. Dufrene, Heesook Lee
Date:	November 20, 2013
Protocol Title:	"The Relationship between Research Training Environment, Researcher Identity Formation Process, and Research Activity among Counseling Doctoral Students"
IRB#:	05Nov13

The IRB has deemed that the research and procedures described in this protocol application are exempt from federal regulations under 45 CFR 46.101category 2, due to the fact that the information obtained is not recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects.

Exempt protocols do not have an expiration date; however, if there are any changes made to this protocol that may cause it to be no longer exempt from CFR 46, the IRB requires another standard application from the investigator(s) which should provide the same information that is in this application with changes that may have changed the exempt status.

If an adverse, unforeseen event occurs (e.g., physical, social, or emotional harm), you are required to inform the IRB as soon as possible after the event.

Best wishes on your project.
Sincerely,

Robert D. Laird, Ph.D., Chair
UNO Committee for the Protection of Human Subjects in Research

Vita

       Heesook Lee is a native Korean. She earned a Bachelor of Arts degree in Psychology in 1992 from Korea University in Seoul, Republic of Korea and earned a Master of Arts in Marriage and Family Counseling degree in 2002 from New Orleans Baptist Theological Seminary, New Orleans. In May 2017, she earned a Doctor of Philosophy degree in Counselor Education from the University of New Orleans in New Orleans. Heesook is a Licensed Professional Counselor (LPC) and registered intern of marriage and family therapist(MFT). She is a member of the American Counseling Association (ACA), Golden Key International Honor Society, and the Alpha Eta UNO chapter of Chi Sigma Iota. In addition, she is a member of Korea Counseling Psychological Association and Korea Counseling Association.

       Heesook has experience in both mental health counseling and agency settings. In addition, she served as an individual and group university supervisor to master's-level students in practicum and internship sites. Presentations include the Annual Convention of the American Counseling Association and the Southern Association of Counselor Education and Supervision on research transitioning and multicultural counseling, the Convention of the Association for Counselor Education and Supervision(ACES) Conference poster presentation on research training, the Annual Convention of the American Counseling Association (ACA) poster presentation on Disability Identity Process, Identity Distress, and Louisiana Education Research Association (LERA) Conference on Advisory Working Alliance and Research Training Environment. Research interests include the mental health counseling, research training, multicultural counseling, family counseling, and identity and mental health.