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Correlates and predictors of cognitive complexity among counseling and social work students in graduate training programs

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Correlates and Predictors of Cognitive Complexity among Counseling and Social work Students in Graduate Training Programs

by

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Dedication

This dissertation is dedicated to my wife Siria and our daughter Imani. You have been my inspiration and you've taught me to live and finish strong.

Acknowledgements

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ABSTRACT

For this study, a web-based survey method was used as a means of collecting data to test a predictive model of education, supervised clinical experience (SCE), age, human services experience (HSE) and cognitive complexity. The theoretical framework for the study was Perry's (1970; 1999) scheme of intellectual development. The sample consisted of 332 counseling and social work students in graduate training programs in four different regions of the United States. The instruments used in the study were a researcher-developed demographic questionnaire and the Learning Environment Preferences (LEP) instrument (Moore, 1987). The results of the hierarchical regression analysis indicated that education and human services experience predicted a significant proportion of the variance in cognitive complexity. However, age and supervised clinical experience did not significantly predict any of the variance in cognitive complexity.

Additional analyses were conducted to examine the effects of gender, ethnicity, programs, and earned degrees on a measure of cognitive complexity. Results of the Analyses of Variance (ANOVAs) did not reveal significant gender, ethnicity, program differences; however, as expected there were differences in terms of previously earned

degree. Students who previously earned master's degrees had significantly higher cognitive complexity scores than students who had only earned a bachelor's degree.

This study provided partial support for Perry's theory of intellectual development. The study also has implications for supervision, education and training of students in counseling and related fields.

Chapter One

Introduction

This chapter provides background information on cognitive complexity across different developmental levels in counseling and related fields. This chapter outlines the statement of the problem and significance and purpose of the study. An outline of the organization of the remainder of the dissertation is provided at the end of the chapter.

Background

Cognitive development was defined as movement from simplistic ways of viewing external events to more complex ways of viewing external events (Perry, 1970, 1999). Moreover, it was the ability to become more adaptive in terms of reasoning and behaviors (Brendel, Kolbert, & Foster, 2002). Cognitive development could be conceptualized as an increase in cognitive complexity, which was defined as the extent to which individuals differentiate (i.e., understand and analyze) and integrate (i.e., make meaning) external events (Streufert & Swezey, 1986). Therefore, as individuals become more complex in their thinking (i.e., cognitive development), they often seek out more complex situations to master. Research suggested that individuals with low levels of cognitive complexity think and behave differently than individuals at higher levels (Brendel et al., 2002; Granello, 2002; Rapaport, 1984; Stoltenberg & Delworth, 1987; Thompson, 1999). Furthermore, individuals with high cognitive complexity might be better suited for professions, such as counseling and related fields, that call for complex problem-solving capabilities (Stoltenberg & Delworth, 1987). On the other hand,

individuals with low cognitive complexity might encounter problems with various aspects of the counseling process, such as empathy and nonjudgmental attitudes toward their clients, because these individuals are concrete and inflexible in thinking and behaviors (Brendel et al., 2002).

Helping professionals in counseling, social work, psychology and related fields have the task of facilitating behavioral change among individuals, groups, families and communities. However, this is no simple task. At minimum, it requires that the practitioner is capable of understanding the complex nature of behavior and behavioral change among diverse groups of clients. There was sufficient evidence that cognitive complexity was an important counselor variable, positively linked to psychological functioning (Brendel et al., 2002), confidence and focus on counseling effectiveness (Birk & Mahalik, 1996), empathic understanding (Alcorn & Torney, 1982; Benack, 1988; Lovell, 1999a; Lyons & Hazler, 2002) and more sophisticated descriptions of client characteristics (Borders, 1989). Although significant cognitive growth might occur after students' training, the goal of training programs was for students to demonstrate higher levels of cognitive complexity by the end of their programs (cf. Skovholt & Ronnestad, 1992). Research provided support for the premise that students were able to develop in terms of cognitive complexity during their program (Brendel et al., 2002; Fong, Borders, Ethington, & Pitts, 1997; Granello, 2002). Brendel, Kolbert, and Foster (2002) cited the importance of cognitive developmental theory in explaining cognitive complexity among counselors. Perry's (1970; 1999) scheme was the cognitive developmental framework used in this study. It provided a general framework for describing where students were in terms of cognitive complexity and explained how developmental changes might occur,

thus providing a cognitive map for development. The Perry scheme consisted of nine different positions that outlined intellectual and ethical development. The nine positions were often grouped into four categories. These categories were dualism, multiplicity, relativism, and commitment within relativism. The scope of this study was limited to exploring intellectual or epistemological development, which encompassed dualism, multiplism, and relativism. According to the scheme, as students developed cognitively, they moved from an absolutist view of the world (i.e., dualism) to a pluralistic view (i.e., relativism) to a constructivist view (i.e., commitment within relativism) (Hofer & Pintrich, 1997; Perry, 1970, 1999).

Cognitive developmental theory might explain occurrences of cognitive developmental processes in supervision (Blocher, 1983). This developmental assumption spawned questions concerning the relationship between cognitive complexity and the training of graduate students. One important question worth exploring was what training variables were related to student cognitive complexity (Bernard & Goodyear, 2004).

To address this question, it was important first to identify two major types of training variables in graduate training programs in the helping professions. Training variables could be divided into two types of experiences: didactic experience and field experience (*cf.* Blocher, 1983). Didactic experience involved instructional processes that occurred in a classroom environment and might include simulated client practices. The classroom environment usually dictated that students interact with the professor and other students in a classroom. According to Perry (1999), didactic experience would be sufficient to bring about changes in cognitive complexity because the instructor and peers would provide the necessary support and challenge. Field experience, on the other hand,

was direct practice under supervision with actual clients. This type of experience went beyond role-play or simulated client scenarios and offered the trainee "real world" experience under supervision of a trained supervisor. Although both didactic experience and field experience operated as a whole unit for practitioners-in-training, much thought was given to the strength of each variable in predicting cognitive complexity (Bernard & Goodyear, 2004). In terms of the field experience and cognitive complexity, there were differing assumptions concerning whether work with actual clients or supervision was responsible for changes in cognitive complexity. Blocker (1983) defined supervision as

> specialized instructional process in which the supervisor attempts to facilitate the growth of a counselor-in-training using as the primary educational medium the student's interaction with real clients for whose welfare the student has some degree of professional, ethical, and moral responsibility. (p. 27)

However, because much of the literature "assumes that experience under supervision and cognitive development enjoy a symbiotic relationship" (Bernard & Goodyear, 2004, p. 108). It was important to consider Bernard and Goodyear's (2004) definition of supervision,

> an intervention provided by a more senior member of a profession to a more junior member or members of that same profession. The relationship is evaluative; extends over time; and has the simultaneous purposes of enhancing the professional functioning of the more junior person(s), monitoring the quality of professional services offered to the clients that

> she, he, or they see, and serving as a gatekeeper for those who are to enter the particular profession. (p. 7)

The former emphasized the importance of work with actual clients as a mechanism for cognitive development, while the latter emphasized supervision under close scrutiny as the mechanism for change.

Statement of the Problem

Much thought was given to the relationship between training variables and cognitive complexity. The discussions generated several assumptions concerning whether work experience with actual clients or supervised experience was responsible for student gains in cognitive complexity. However, these claims were not adequately tested to assure that the effects of other variables, such as age and education, were controlled. To this end, education and age were underemphasized in supervision research; however, they could not be ruled out as important factors in student cognitive complexity. In order to get a clear understanding of the role of variables that might be catalysts for cognitive development among students in the helping fields, work experience with actual clients was operationalized as the amount of employment, practicum, internship and volunteer experiences in months of work providing direct services to individuals, families or groups (i.e., human services experience), and supervision was operationalized as the amount supervision received while working in human services (i.e., clinical supervised experience). These and other operational definitions will be discussed further in Chapter 3.

Significance of the Study

This research was important for institutions of higher education because it extended the knowledge base regarding training variables (i.e., education, HSE and SCE) and a demographic variable (i.e., age) that might contribute to cognitive complexity among students in graduate training programs. Given that cognitive complexity was essential to the helping fields, as researchers argued, facilitating the types of experiences that increased cognitive complexity might help training programs to teach students to become effective practitioners. A general understanding of student cognitive complexity level might also enable instructors to provide the best environment to enhance student growth intentionally, instead of leaving student development to chance (Fong et al., 1997).

Purpose of the Study

The purpose of this study was to test a predictive model among demographic variables and cognitive complexity of graduate students using William Perry's (1970; 1999) theory of intellectual development as the central framework. Perry's scheme was a cognitive developmental model that focused on internal structures that determined how individuals perceived, organized and evaluated external events and how they coped with those events (Rapaport, 1984; Thompson, 1999). Although Perry's theory was criticized for being gender-biased because it was developed using a sample of male students (Belenky, Clinchy, Goldberger, & Tarule, 1997), it was widely referenced in the literature and provided a good framework for adult cognitive development.

Extensive research was conducted using Perry's scheme of cognitive development with undergraduate college students (Baxter Magolda, 1992; Belenky, Clinchy,

Goldberger, & Tarule, 1986; Felder & Brent, 2004; Gottlieb, 2007; King & Kitchener, 1994; Markwell & Courtney, 2006; Perry, 1970) and graduate students in counseling (e.g., Granello, 2002; Knefelkamp & Slepitza, 1976; Lovell, 1999a, 1999b; McAuliffe & Lovell, 2006). Cognitive developmental theorists (e.g., Benack, 1988; Blocher, 1983; Brendel et al., 2002; Granello, 2002; Hood & Deopere, 2002; Lovell, 1999a) argued that cognitive complexity was essential for students in the helping professions to become effective practitioners; therefore, the participants selected for this study were graduate students in training programs in the helping professions. Data collection involved the used of a researcher-designed demographic questionnaire and the Learning Environment Preferences Scale (LEP, Moore, 1987), an instrument that measured Perry's (1970; 1999) scheme.

The demographic questionnaire was based on previous research (See Chapter 2). The questionnaire contained the following demographic items: age, gender, ethnicity, education experience, HSE, SCE and practicum, internship, or practice setting (Appendix B). The LEP had a Cognitive Complexity Index (CCI) calculated into a single score that corresponded to the five Perry (1970; 1999) positions to explain intellectual or epistemological development (Appendix C). These were administered online using a web-based survey tool to provide some advantages over mail-out surveys in terms of cost savings, short time frame for the collection of responses, increased responses, ease of transferring data into a database for analysis and the possibility of a wider geographic coverage area (Lefever, Dal, & Matthíasdóttir, 2007; Mertler, 2001).

Research Question

The research question examined whether age, education, HSE and SCE were associated with the criterion variable, cognitive complexity. The study answered the following research question: To what extent do age, education, HSE and SCE predict cognitive complexity? This question was analyzed using a hierarchical multiple regression model. Based on an *a priori* power analysis (Algina & Olejnik, 2003), a sample size of 77 was required in order to exceed a statistical power of .80 using alpha = .05 and an effect size of $f^2 = .15$.

Hypotheses

H_0: No variables (education, SCE, age, HSE) will predict cognitive complexity.

$H_{1:}$ Education, SCE, age and HSE will predict cognitive complexity.

$H_{2:}$ The combination of education and SCE will predict more of the variance in cognitive complexity than education and age or education and HSE. These hypotheses were based on the assumption that education and experience were needed to increase cognitive complexity among counseling students (Bernard & Goodyear, 2004).

The hypotheses were analyzed using a hierarchical multiple regression to test the predictive model of age, education, experience and cognitive complexity. Education was entered into the model first because prior studies showed a positive relationship between education and cognitive complexity (e.g., Belenky et al., 1986, 1997; Perry, 1970, 1999; Wilson, 1995a, 1995b). SCE was entered next because recent studies have been interpreted as showing a positive relationship between SCE and cognitive complexity

(Granello, 2002; Lovell, 1999b). Age was entered next because there was inconsistent evidence concerning the relationship between age and cognitive development (Granello, 2002; Hood & Deopere, 2002; Wilson, 1995b). HSE was entered last because there were no studies that found a relationship between general experience in human services and cognitive complexity.

Assumptions of the Study

The following assumptions were made for this study:

1. Cognitive complexity was seen as a favorable counseling variable.
2. Effective counseling requires higher levels of cognitive complexity.
3. Participants would give honest and accurate responses on the LEP and demographic questionnaire. To encourage honest responses, the LEP and demographic questionnaire were administered anonymously online.
4. The sample might be representative of graduate students in helping professions, such as professional counseling programs and social work.

Conceptual Framework

The conceptual framework presented in Figure 1 shows the relationships among variables under investigation in this study. The aim of this research was to follow as many of the rules as possible for constructing good theory. That is, the research had to be important and practical to counseling and social work educators and supervisors, have few assumptions and account for considerable knowledge concerning cognitive complexity among graduate student in the helping professions.

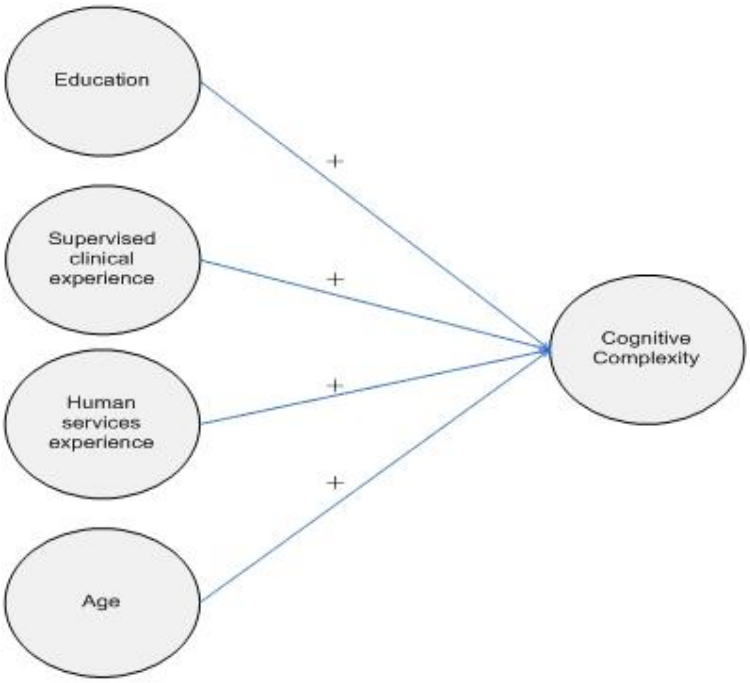

Figure 1. Hypothesized relationships among variables.

Definitions of Major Terms

The following definitions were used in this study (Note: definitions with no citations represent the researcher's operationalization of terms):

Advanced Standing: A classification given to eligible graduates of baccalaureate social work programs allowing them to enter the advanced level of the MSW program.

Cognitive Complexity: The extent to which individuals differentiate and integrate external events (Streufert & Swezey, 1986).

Cognitive Complexity Index (CCI): The single-score formula incorporating all the participants' stage scores on the Learning Environment Preferences (LEP, Moore, 1987, 1989). This single-score ranged from 200-500 and measured the complexity of thinking according to Perry's (1970; 1999) positions two to five.

Cognitive Development: Movement from dualistic, objectivistic view of knowledge to a more subjective, relativistic view, and then to a constructivist view of knowledge (Hofer & Pintrich, 1997; Perry, 1970, 1999).

Counseling Students: Includes masters and doctoral programs in professional counseling, mental health counseling, rehabilitation counseling, counselor education, counseling psychology, marriage and family counseling and community counseling.

Development: Movement of an individual from a lower position to a higher position based on Perry's model.

Education: Number of years of education completed.

Empathy: The ability to take "multiple perspectives on phenomena [which facilitates] an enhanced ability to see a situation from another person's point of view" (Lovell, 1999a, p. 196).

Epistemology: The branch of philosophy concerned with the nature of knowing. How individuals understand and make meaning of the world (Perry, 1970, 1999).

Intellectual Development: The first five positions of the Perry scheme, which deal with the way in which individuals make meaning from simple to complex ways of thinking (Perry, 1970, 1999).

Locus of Control: How students define themselves and their environment (i.e., internal or external factors) (Knefelkamp & Slepitza, 1976).

Helping Professional: Refers to professionals in the field of psychology, social work and counseling such as professional counseling, counselor education, community counseling, marriage and family counseling, mental health counseling, pastoral counseling, school counseling, career counseling and rehabilitation counseling.

Helping Profession: Refers to the field of psychology, social work and counseling, such as professional counseling, counselor education, community counseling, marriage and family counseling, mental health counseling, pastoral counseling, school counseling, career counseling and rehabilitation counseling.

Human Services Experience (HSE): Total number of months worked in the helping profession providing direct services with individuals, families or groups (i.e., employment, practicum, internship and volunteer hours).

Supervised Clinical Experience (*SCE):* HSE with at least one hour of group or individual supervision (See definition of supervision).

Supervision: " An intervention provided by a more senior member of a profession to a more junior member or members of that same profession. The relationship is evaluative, extends over time and has the simultaneous purposes of enhancing the professional functioning of the more junior person(s), monitoring the quality of professional services offered to the clients that she, he, or they see and serving as a gatekeeper for those who are to enter the particular profession" (Bernard & Goodyear, 2004, p. 7).

Limitations of the Study

This study may be limited by the web-based survey method used. While web-based survey methods provide some advantages in terms of cost savings, short time frame for the collection of responses, ease of transferring data into a database for analysis and the possibility of a wider geographic coverage area, they posed possible limitations. These were lack of a population list, a nonrandom sample, inability to calculate response rate and computer access to the survey (Mertler, 2001). There might be a potential

limitation of lowered response rates for web-based surveys (Converse, Wolfe, & Huang, 2008).

Because data were gathered using only self-reports , response bias posed a potential limitation (Ellis, Ladany, Krengel, & Schult, 1996). A convenience sampling was employed; it was unknown whether respondents to the survey were different from non-respondents (i.e., non-response error). Another potential limitation was the lack of demographic variability in the sample in terms of gender and ethnicity because of the lack of diversity in counseling and social work programs (Granello, 2002).

Summary

This study was based on two prevalent assumptions in the literature on supervision that were offered as explanations of why students might show an increase in cognitive complexity at the end of the programs: 1) supervision might be the catalyst for increasing cognitive complexity; and 2) experience involving actual clients might account for an increase in cognitive complexity. This study was designed to test a predictive model among age, education, HSE, SCE and cognitive complexity. The theoretical framework for this study was based on the Perry scheme. Perry's (1970; 1999) theory of intellectual development offered a general description of how students progress from simple to complex ways of thinking. These ways of thinking acted as filters through which the student gave meaning to his or her world. Cognitive development among college students was studied extensively using Perry's scheme; however, no studies tested the assumptions regarding supervision and work experience with actual clients, and their impact on cognitive complexity.

Organization of the Study

This dissertation is organized into five chapters. Chapter 1 provided an overview of the topics that will be discussed in the study. Chapter 2 provides the framework on which this study is grounded and the literature review. Chapter 3 provides a detailed description of the method used for this study, the instrument used and its psychometric properties and a description of the sample. Chapter 4 provides the results of the study. Chapter 5 provides the discussion, including limitations, of the theoretical and practical implications.

Chapter Two

Literature Review

This chapter describes literature relevant to the research purposes of this dissertation. The review of the literature contains four major sections:

1. Cognitive Complexity and Counseling
2. Perry Scheme (1970, 1999), the central component of this study
3. Review and evaluation of the relevant literature
4. Summary

Several definitional distinctions should be considered in this review. Unless otherwise specified, *cognitive complexity* refers to the extent to which individuals differentiated and integrated external events (Streufert & Swezey, 1986). Differentiation is the ability to understand and analyze available data; integration refers to how one interprets or makes meaning of the available data. *Cognitive development* refers to movement from a dualistic, objective view of knowledge to a more subjective, relativistic view, and then to a constructive view of knowledge (Hofer & Pintrich, 1997; Perry, 1970, 1999). Cognitive development is an increase in cognitive complexity. Cognitive development is used interchangeably with epistemological development. *Epistemology* is a branch of philosophy concerned with the nature of knowing and how individuals understand and make meaning of the world (Perry, 1970, 1999).

Cognitive Complexity and Counseling

Cognitive complexity plays an important role in counselor development. An examination of the role of cognitive developmental variables is essential to counseling and related fields. Usually, as students go through college and respond positively to the challenges of peers and instructors, they begin to develop gradually (i.e., disequilibration). That is, individuals interact with their environment and respond to information by assimilating the information into existing schemas or accommodating existing schemas to new information, thus, creating new schemas. Schemas determine how individuals organize and evaluate incoming information. The knowledge constructed by individuals formed into chunks, which enables them to attend to details and inconsistencies (Sakai & Nasserbakht, 1997). Thus, complex reasoning and adaptive behaviors play an essential role in students becoming competent counselors (Brendel et al., 2002).

Counseling involves a higher level of cognitive complexity, which was defined as the ability to take multiple perspectives – empathy, the ability to differentiate among alternatives, to manipulate facts and causes and to integrate and synthesize large amounts of data – in a collaborative way with clients (Blocher, 1983). Several studies illustrated the importance of cognitive complexity in counseling.

Benack, 1988. Using a small sample of college students, Benack (1988), in three separate studies, compared dualists and relativists on their ability to express empathy. Study 1 used a sample of 20 (N = 7 relativists; N = 8 dualists; N = 5 mixed dualistic/relativistic) students in an introductory counseling course. Participants included 10 women and 10 men with an age range from 21-42 years. In Study 1, relativists had

significantly higher scores on overall empathy than dualists (m = 3.9 relativists, m = 2.9 dualists t (12) = 3.68, $p < .01$).

The participants in Study 2 included 18 undergraduate students, between 19-22 years of age, who had no formal training in counseling. The participants completed the epistemology interview completed in Study 1. Six participants were rated as showing relativistic thought and 12 were rated as showing dualistic thought. They were given descriptions of seven hypothetical counseling situations and instructed to write a brief essay describing the client's inner experience but not provide a helpful response. Results indicated that dualists attended to the problem situation more often, while relativists attended to the client's experience more often but the difference was not significant.

Study 3 participants were drawn from the same population as Study 2. They included 24 undergraduate students (14 men and 10 women), ranging from 19-22 years. Relativists were significantly more likely than dualists to express empathic understanding of their clients (m = 1.92 for relativists, m = .56 for dualists t (22) = 1.85, $p < .05$). Benack concluded that the studies indicated "there is a strong tendency for people who think relativistically about epistemological issues to more frequently and accurately express empathic understanding of other people's inner experience" (Benack, 1988, p. 229). The studies brought to the forefront the important relationship between epistemological development and empathic understanding among students with counseling experience and students without counseling experience; however, the studies had limitations; for example, Benack (1988) used a small sample in each study, and she did not report differences in terms of cognitive complexity or empathy among variables such as gender, age, ethnicity or education.

Lovell, 1999. To replicate and extend Benack's study, Lovell (1999a) examined empathy and cognitive development using a national sample of counseling students (N = 340). The sample was selected from a random, computer-selected, invitation pool of 2000 individuals based on their student membership provided by the American Counseling Association (ACA). Eighty-one percent of the participants were female, 55% majored in liberal arts as undergraduates and 79% were pursuing a master's degree. The mean age for all participants was 37.4 years with a standard deviation of 9.3 years. Lovell did not report whether different ethnicities were represented in his sample.

Lovell's (1999a) study was based on adult cognitive-developmental theory, using the schemes in Perry's model of intellectual development as a framework. The purpose of the study was to investigate three different research aims using a large national sample of counseling students. First, Lovell was interested in the correlation between counselor epistemic-cognitive development and empathy. He defined empathy as the ability to take "multiple perspectives on phenomena [which facilitates] an enhanced ability to see a situation from another person's point of view" (Lovell, 1999a, p. 196). Second, he investigated whether relativists scored higher on a measure of empathy than students at lower Perry positions. This would replicate Benack's (1988) study that found a link between relativism and empathy. Third, he determined if differences on a measure of the criterion variable, empathy among groups of participants (categorized by four of Perry's intellectual positions) would be found in the predicted (positive) direction. That is, would empathy increase as supervisee development increased? Empathy was measured by the Hogan Empathy Scale (EM) (Hogan, 1969, as cited in Lovell, 1999). The EM measured both cognitive empathy (mental perspective taking) and empathic disposition (cognitive

and affective empathy). The alpha coefficient for the EM was reported as high as .71 and the test-retest reliability was reported as high as .84. Cognitive complexity was measured by the LEP.

For hypothesis 1, Lovell (1999a) used a correlational design to examine the relationship between empathy and cognitive complexity. The correlation between the EM and cognitive complexity was reported as being moderate ($r = .31$; $p < .001$). Lovell argued that correlation statistics did not fit adequately with the theoretical underpinnings of the stage theory, showing empathy at the different levels of cognitive complexity.

To investigate hypothesis 2, he tested the samples using a nonparametric test. Results of the nonparametric Mann-Whitney test indicated that relativists (i.e., students that held the epistemological belief that all knowledge was contextual) were higher on the EM ($M = 25.23$, $SD = 3.72$) than those at lower epistemological positions ($M = 23.77$, $SD = 4.01$, $U = 11432.00$, $p < .001$).

Hypothesis 3 was tested by disaggregating the participants into four epistemic positions: dualism ($N = 20$); early multiplicity ($N = 85$); late multiplicity ($N = 69$); relativism ($N = 166$). The results indicated that high levels of cognitive complexity, based on Perry's schemes, were associated with higher levels of empathy: dualism ($M = 21.7$, $SD = 3.90$); early multiplicity ($M = 23.46$; $SD = 3.82$); late multiplicity ($M = 24.75$; $SD = 4.03$); relativism ($M = 25.23$, $SD = 3.72$). relativists scored higher on the EM (($M = 25.23$, $SD = 3.72$, $p < .001$) than those at lower positions, confirming Benack's (1988) earlier findings of significant differences between cognitive levels on measures of empathy.

The results indicated that high levels of cognitive complexity were associated with higher levels of empathy (Lovell, 1999a). Relativists possessed greater empathy than dualists and multiplists, confirming Benack's (1988) earlier findings. The study used a random sample selected from the American Counseling Association student member list. However, there were several limitations worth noting. Only student members were able to participate in the study; thus, it is unknown whether nonmembers were different from members. In addition, the researcher did not report cognitive complexity for variables, such as age, gender, ethnicity, education and experience, which could have a significant effect on the results of this study.

Lyons and Hazler, 2002. In a related study, Lyons and Hazler (2002) conducted a cross-sectional study examining cognitive development and empathy among 162 1st- and 2nd-year master's-level counseling students with ages ranging from 21 to 55 years (M = 31 years). Eighty-one percent of the participants were women and 19% were men: eighty-four percent were European American, 9% were African American, 1% was Latino and 6% were either other or not American citizens. The majority of the participants (76%) were community counseling students. Nine percent were school counseling students, 6% were rehabilitation students and 3% were career counseling students. Students were administered two measures of empathy and the LEP.

To measure affective empathy, they used the Questionnaire Measure of Emotional Empathy (QMEE; Mehrabian & Epstein, 1971 as cited in Lyons & Hazler, 2002). To measure cognitive empathy, they used the Empathic Understanding Scale (EUS; Carkhuff, 1969 as cited in Lyons & Hazler, 2002). The LEP was used to measure cognitive complexity (Moore, 1987).

Participants were categorized as low or high cognitive complexity based on their LEP scores. Students who responded to most items representing POS/2 and POS/3 were categorized as having low cognitive complexity and students who responded to most items representing POS/4 and POS/5 were categorized as having high cognitive complexity.

They conducted a series of 2 x 2 Analyses of Variance (ANOVAs). The first 2 x 2 ANOVA found a significant different between 1st – (*M* = 54) and 2nd – (*M* = 46) year students on the QMEE instrument F (1, 160) = 5.953, $p < .05$, suggesting that 2nd-year students had higher affective empathy than 1st-year students. However, no significant difference was found on the QMEE when comparing students with low cognitive complexity (*M* = 47) and students with high cognitive complexity (*M* = 52) F (1,158) = .177, $p = .68$.

The second 2 x 2 ANOVA found a significant difference between 1st- (*M* = 50) and 2nd – (*M* = 42) year students on the EUS (lower scores represent higher cognitive empathy) instrument F (1, 160) = 14.564, $p < .05$, suggesting that 2nd-year students had higher cognitive/skill-based empathy than 1st-year students. However, no significant difference was found on the EUS when comparing students with low cognitive complexity and students with high cognitive complexity F (1,158) = 2.238, $p = .14$.

The third and fourth 2 x 2 ANOVAs was run after re-categorizing the cognitive complexity groups by removing cognitive complexity scores that fell within the middle range. Since most of the students fell within this range, only 53 students were used for the third and fourth procedures. The third 2 x 2 ANOVA found a significant difference in QMEE scores for low (*M* = 45) and high (*M* = 57) cognitive complexity, suggesting that

students with high cognitive complexity had higher affect trait-base empathy than students with low cognitive complexity F (1, 51) = 6.04, $p < .05$. The fourth 2 x 2 ANOVA found no significant differences between low (M = 47) and high (M = 41) cognitive complexity and cognitive/skill-based empathy F (1, 51), p = .11. As noted, the sample size for the last two procedures was small. Therefore, the results of this study did not confirm to or refute earlier studies; however, the results demonstrated that, even with a small sample, a relationship between cognitive complexity and empathy could be found (Lyons & Hazler, 2002). On the other hand, the study did not report experience of the students, which could have played a role in the amount of cognitive complexity and empathy displayed.

Granello, 2002. Granello (2002) conducted a cross-sectional analysis of counseling students from 13 colleges and universities in nine states who were at the beginning (N = 66), middle (N = 74), and end (N = 65) of their training (N = 205). Participants were mostly women (N = 167) and European American (N = 185). Other participants included ten African Americans, two Hispanics, two Asian Americans and six other. Students were enrolled in community mental health (N = 83), clinical mental health (N = 27), school (N = 68), rehabilitation (N = 9) and marriage and family (N = 14) counseling programs. The mean age of participants was 32.74 year (SD = 9.23) with a range from 21-57.

The results of the study indicated that students made more gains in *cognitive complexity,* per CCI scores, from the middle (M = 361.39) to the end (M = 377.06) of their training than they made from the beginning (M = 359.39) to the middle of their training ($p < .05$). Granello (2002) addressed the confounding nature of education on

experience by examining prior HSE, that is, experience gained before entering graduate school. She found no relationship between prior HSE and cognitive complexity. This finding might provide some support for the argument that experience alone might not be sufficient to bring about changes in cognitive complexity; however, prior HSE was a broad concept that might or might not include direct practice with individuals or groups or a chance for guided reflection.

Granello reported that students made more gains in cognitive complexity while in their internships. Fong et al. (1997) reported similar results in an earlier study. It was argued that increases in cognitive complexity during internships might be due to students working with actual clients (Fong et al., 1997). This was consistent with Blocker's (1983) assumptions. However, Lovell (1999b) conducted a study with master's level counseling students (N = 83) found that supervised clinical experience was related to counselor cognitive development. According to the latter view, counseling students with more SCE should have higher levels of cognitive complexity.

Studies found that experience, however, might not be the most critical factor related to increases in cognitive complexity. These studies are presented below.

Holloway and Wolleat, 1980. Holloway and Wolleat (1980) investigated complexity level in counseling students using a semi-projective instrument, which measured conceptual level (N = 37). They showed that cognitive complexity was related to more effective clinical hypotheses describing their client's problem regardless of their experience level.

Borders, Fond, and Neimeyer, 1986. Borders, Fong, and Neimeyer (1986) found that experienced counselors might be simplistic in their conceptualizations of clients,

while inexperienced counselors could be complex in their conceptualizations of clients. However, student experience did not play a role in students' perceptions of their clients. That is, students with lower ego levels were more simplistic and concrete in their descriptions of their clients than students at higher ego levels, who used more sophisticated and interactive descriptions of their clients (Borders et al., 1986).

Borders, 1989. However, in a later study, Borders (1989) investigated in-session cognitions among first-year practicum students ($N = 27$). She found that experience was related to cognitive complexity, which was inconsistent with Borders et al.'s (1986) findings. She reported that, despite their ego developmental levels, students at the same experience levels (first-practicum) exhibited black and white thinking. This was consistent with the developmental models of supervision that posited that students at a low experience level thought and behaved differently from students at high experience levels (Loganbill, Hardy, & Delworth, 1982; McNeill, Stoltenberg, & Romans, 1992; Ronnestad & Skovholt, 1997; Stoltenberg & Delworth, 1988).

Summary. Cognitive Complexity might play a significant role in student empathy-a necessary counseling variable. Experience may be factor in cognitive development. However, there is no agreed upon definition of experience, and the ways in which experience have been operationalized in the counseling literature have not addressed the confounding nature of education on the experience variable being tested. In the studies presented, it was difficult to separate training, education and experience into three different variables (Bernard & Goodyear, 2004). In fact, training, education, and experience were, at times, used interchangeably in the literature. Both training and supervision might be needed to bring about an increase in cognitive complexity of

students in counseling programs (Bernard & Goodyear, 2004); however there could be other variables that account for the changes in student cognitive complexity.

The Perry Scheme: Cognitive Development

In the previous section, relevant counselor cognitive complexity studies were reviewed. This section discusses the Perry scheme—the theoretical framework used in this study. William Perry (1970) conducted a longitudinal study of liberal arts students from Harvard and Radcliffe. He examined how students viewed knowledge and learning by devising an instrument called the Checklist of Educational Values (CLEV). An example of one question from the CLEV was "The best thing about science courses is that most problems have only one right answer." Perry administered the CLEV to a random sample of 313 first-year students in 1954-1955. He reinterviewed 31 of these students (27 men and 4 women), annually. One of the questions he asked was, "Would you like to say what has stood out for you during the year?" Initially, Perry sought personality variables that would emerge from the interviews but what he found were schemes of cognitive developmental processes. Perry conducted a similar study with a random sample of 109 first-year student (85 men and 24 women) that began in 1958-1959. From this research, Perry developed a stage model with nine positions. The first five positions (basic dualism, full dualism, early multiplism, late multiplism and relativism) described epistemology and intellectual development and the last four positions (pre-commitment, commitment, challenges to commitment and post commitment) described ethical and identity development (Finster, 1989). The last four positions were important in cognitive development; however, they will not be addressed in this study, which sought an understanding of cognitive complexity according to the

first five positions of Perry scheme. Descriptions of the five positions that make up epistemological development are as follows.

Students in *basic dualism* (POS/1) were dependent on authority to make decisions for them. Students with dualistic thinking believed there were right and wrong answers to all questions and authorities (e.g., instructors, professors, supervisors) had the right answers. The tasks for students in this stage were to learn the right answers and ignore all others. In *full dualism* (POS/2), students believed that some authorities disagreed on subjects like psychology and philosophy but others agreed on subjects like math and science. The task for the student was to learn to find the right answers (Rapaport, 1984).

Students who adopted a dualistic epistemology preferred structure, which they saw as giving them the right answers. For example, if an instructor had different views than other instructors or views expressed in the text, the student noted this as conflict among authorities. The student might also feel hostility towards the instructor if he or she did not give the right answers or appeared vague (Rapaport, 1984).

In *early multiplism* (POS/3), students might believe there are conflicting answers; therefore, they might trust their own intuition and not external authority. Students in this position believed there were two kinds of questions: those with answers that we know now and those with answers that we do not know yet. Therefore, they believed that some authorities had the right answers and others did not yet know the right answers. Another view of early multiplism was that there were right and wrong ways to find answers to questions. Here, the students might believe the authority's role was to teach them proper methods to find the right answers instead of giving them the right answers. Thus, students might feel their task was to learn the right way to find the correct answers (Rapaport,

1984). In *late multiplism* (POS/4), students hold the belief that most problems have no known answers and everyone has a right to his or her own opinion, known as the *less cynical form* of late multiplism. They might believe that some problems are unsolvable; therefore, it did not matter which solution was chosen. This was known as a *more cynical form* of late multiplism.

In *contextual relativism* (POS/5), students believed that all proposed solutions must be supported by reasoning. They understood that instructors were not asking for the right answers but only for those answers that could be supported (Rapaport, 1984). Within a certain context, there could be right and wrong answers. Hence, there were rules for good thinking. Moreover, there were right and wrong answers; some answers were better than others but depended on context. Students that adopted a relativistic epistemology believed that their task was to learn to evaluate answers.

Much attention was given to transitions from one stage to another (e.g., Commons, 2002; Commons & Richards, 2002; Fong et al., 1997; Hess, 1987; Holloway, 1987). Perry made note of horizontal decalage, a Piagetian term meaning horizontal movement within a stage. Perry did not believe that individuals regressed to earlier stages when they were learning something new. He believed that individuals operated from more than one stage at a given time but had a dominant stage. Movement within or between stages was accomplished by an innate inclination toward autonomy and a supportive but challenging environment (Perry, 1970, 1999).

Perry's model laid the groundwork for other adult intellectual development theories (Baxter Magolda, 1992; Belenky et al., 1986, 1997; King & Kitchener, 1994). Perry's scheme was important to this study because it provided a framework for

describing adult cognitive development levels. Perry's (1970; 1999) stages were flexible and adequately described individuals who might be proficient in one area but were learning something new. The novice might be at a low position until he or she was able to assimilate and accommodate the new experiences of a higher position.

Measuring Perry's Scheme. Perry's research methods were time-consuming. He conducted only two studies over a 10-year period; however, other researchers (Baxter Magolda & Porterfield, 1985; Erwin, 1983; Knefelkamp, 1974; Moore, 1987) discovered less time-consuming ways for measuring intellectual development.

Several instruments were designed as alternatives to Perry's original interview format. The first instrument created was a written protocol developed by Knefelkamp (1974) and Widick (1975) that eventually became the Measure of Intellectual Development (MID, Moore, 1990). The MID was a production-task measure consisting of sentence stems and semi-structured essay questions (Moore, 1990). Another production-task measure, based on the Perry Scheme, was the Measure of Epistemological Reflection (MER) (Baxter Magolda & Porterfield, 1985). Both the MID and the MER measured positions 1-5 of Perry's scheme. Production-task measures were more cost-effective than interviews; however, it was difficult to achieve inter-rater reliability unless the raters were well trained (Moore, 1990). A more cost-effective alternative to production-task measures are questionnaires.

Two scales used to assess the Perry scheme were also developed. The Scale of Intellectual Development (SID), developed by Erwin (1983), was based on Perry's cognitive developmental model. The instrument consisted of 119 items rated on a four-point Likert scale and measured duality, relativism, commitment and empathy. Erwin

argued that cognitive development continued beyond young adulthood; therefore, an empathy subscale was added to reflect this continued adult development beyond Perry's stages.

Another measure of Perry's scheme was the Learning Environment Preferences (LEP) instrument (Moore, 1987, 1989). The LEP was an objective measure of cognitive development, according to the Perry scheme, that included 65 items containing five sentence stems. The five sentence stems corresponded to content in five domains: view of knowledge and learning; role of instructor; role of student and peers in the classroom; classroom atmosphere and activities; and role of evaluation and grading (Moore, 1987). The instrument yielded a general score of overall cognitive development, the Cognitive Complexity Index (CCI). The LEP also offered four percentage scores showing the degree of preference for each of four Perry positions: full dualism (POS/2), multiplicity: early (POS/3) and late (POS/4) and contextual relativism (POS/5). The alpha coefficients for the LEP were .72 to .84 and the test-retest reliability was .89 (Moore, 1989).

The LEP was an acceptable measure of intellectual development according to the Perry scheme. The LEP measured the four of Perry's positions. The SID did not have a multiplism measure, which made up two of Perry's positions. The SID was criticized for not being theoretically grounded in Perry's model (Moore, 1989). However, the LEP was a good measure for this study. The inventory had a CCI subscale, which was essential for the proposed cognitive complexity model.

The Perry Scheme: Review and Evaluation of the Literature

In the previous section, a review of Perry's scheme and the measurements used to operationalize the schemes were presented. This section reviews the literature related to

intellectual development, according to Perry scheme. The review consists of two broad sections: (a) the effects of ethnicity and gender on cognitive complexity and (b) the effects of age, experience and educational level on cognitive complexity.

Effects of ethnicity and gender on cognitive complexity. Perry (1970) studied mostly Caucasian men from an elite university in his original research; however, gender and ethnicity received some attention in the literature. As a critique of Perry's original study, Belenky et al. (1986) studied cognitive development in women. They found that the ways in which women made meaning of their experiences were different from men's, suggesting that Perry's model might not account for women's epistemology. In later research, gender-related patterns were reported in one study (Baxter Magolda, 1992) but no gender differences were found in a study conducted two years later (King & Kitchener, 1994). However, gender issues in cognitive developmental research remained an unresolved issue (Hofer & Pintrich, 1997).

Ethnicity was considered in a dissertation study (Johnson, 1999). Significant differences in cognitive complexity were found between African American and Caucasian undergraduate students (Johnson, 1999). In this study, cognitive complexity was greater for Caucasians than for African Americans except when socio-economic status (SES) was controlled. When SES was controlled, there were no significant differences. On the other hand, when gender was controlled, there were significant differences in cognitive complexity between African American and Caucasian freshmen students. Caucasians were higher in cognitive complexity than African Americans. No differences in cognitive complexity were found for seniors when gender was controlled. The author inferred that both African American and Caucasian students progressed from

simplistic to complex ways of knowing; however, the Perry scheme may not explain African American epistemology (Johnson, 1999).

Cross-cultural studies were almost nonexistent in the literature with regard to Perry's theory. However, Zhang (1999; 2004; Zhang & Hood, 1998; Zhang & Watkins, 2001) conducted cross-cultural studies with Asian students. Repeated studies showed that the (average sample size of 426) cognitive development of Chinese students progressed in an opposite direction, calling into question the universality of Perry's model (Zhang, 1999; Zhang & Watkins, 2001). In these studies, Chinese students progressed from relativistic thought to dualistic thought, showing that different cultures might progress in different patterns than the Perry scheme and that this progression could be the result of social-political factors.

Effects of age, experience, and educational level on cognitive complexity. Other variables, such as age, experience, and educational level, received some attention in the adult cognitive development literature. However, as noted in much of the research on adult cognitive development according to the Perry scheme, most studies were conducted with undergraduate college students. As a result, little was known about development beyond undergraduate education.

More recent studies extended Perry's theory to graduate students (Benack, 1988; Granello, 2002; Hood & Deopere, 2002; Lovell, 1999a, 1999b, 2002; McAuliffe & Lovell, 2006), to nursing professionals in the field (Rapps, Riegel, & Glaser, 2001) and to community members with varying education levels (Hood & Deopere, 2002). In two of these studies, age was not related to cognitive complexity(Granello, 2002; Wilson, 1995b). However, Hood and Deopere (2002) did find age-related differences among

levels of cognitive complexity. Experience, when it was defined as work experience beyond college, was related to cognitive complexity (Rapps et al., 2001); however, when it was defined broadly, it was not related to cognitive complexity (Granello, 2002; Hood & Deopere, 2002). Therefore, the problem with much of the literature examining the relationship between cognitive complexity and experience might be the result of the way in which experience was defined (Granello, 2002). Education level, on the other hand, was found to have a positive relationship on intellectual cognitive complexity across several studies for both males and females and different ethnicities in the United States (e.g., Granello, 2002; Hood & Deopere, 2002; Perry, 1970, 1999).

Hood and Deopere (2002) examined the role of age in adult cognitive development among 165 adults from a sample of community members and college students (88 were from the community sample), while statistically controlling for educational level and intelligence. The community sample included 5% adults who had not graduated from high school; 18% who had graduated from high school but did not attend college; 10% with some college; and 19% who were college graduates. As occupations, 15% were laborers; 25% were clerical workers; 40% were professionals; and 20% were retired. The other 77 participants were selected from a state university. The university participants were either freshmen or sophomores enrolled in an introductory psychology course. Fifty-six percent of the participants were women and 44% were men. Their ages ranged from 18 to 87 years with a mean age of 36 years. The researchers did not report the ethnicities of participants.

Hood and Deopere argued that much of the research on adult cognitive development focused on the role of education in increasing cognitive complexity and

little research examined the role of age. Hood and Deopere hypothesized whether the independent variables of age, education level, intelligence or life experience played a role in the dependent variable, adult cognitive development. They used the Scale of Intellectual Development (SID) (Erwin, 1983) to measure Perry's scheme of intellectual and ethical development. The Quick Test (QT) (Ammons, & Ammons, 1962, as cited in Hood & Deopere, 2002) was used to control for varying intelligence levels. The researchers also gathered demographic data on age, occupation, marital status, religious preferences and information about life experiences, such as educational level, church and community activity and travel experiences to develop the Life Experience Survey.

Results from the hierarchical regression analysis revealed that age was predictive of dualistic thinking (Hood & Deopere, 2002). That is, dualistic thinking increased with age; however, when education was controlled, age accounted for only 1.2% of the scores associated with dualism. When IQ was controlled, age continued to make a significant contribution, accounting for 14.3% of the variance associated with dualism. When both IQ and education were held constant, age accounted for 4.8% of the variance. Age was also negatively related to relativism (r = -.39, p < .01). Age made a significant contribution to the variance with relativism when IQ was controlled (12.2%). When education was controlled, age accounted for 12.5% of the variance with relativism.

Education was negatively related to dualism (r = -.48, p < .01). When age was controlled, education accounted for 17.4% of the variance. When IQ was controlled, education accounted for 18.6% of the variance. Education accounted for 9.1% of the variance when both age and IQ were held constant. Education was positively related to relativism (r = .17, p < .05) but did not make any significant contributions to the

regression coefficients with either age or IQ alone or when they were both held constant. However, education was significantly related to commitment.

IQ was negatively related to dualism (r = -.30, p < .01). IQ accounted for 16.8% of the variance with dualism when age was controlled and 4.9% of the variance when educational level was controlled. When both age and education were controlled, IQ accounted for 8.5% of the variance. IQ was negatively related to relativism (r = -.18, p < .05). IQ contributed 4.6% to the variance when educational level was controlled but did not contribute to variance when age was held constant. Community activity and church activity were not significantly related to dualism and commitment but were negatively related to relativism. Travel was not significantly related to relativism and commitment but was negatively related to dualism.

In sum, age was negatively related to education; education was positively related to IQ; and IQ was positively related to age. Education level showed a strong negative correlation with dualism and a weak positive correlation with relativism. IQ scores were negatively related to dualism and negatively related to relativism. Education and commitment showed a small association; however, neither IQ nor age was related to commitment. The results suggested that age and participation in community or church activities was negatively related to cognitive development; however, intelligence and education were positively related to cognitive development. Less dualistic thinking and more relativistic thinking were positively related to education attainment. They also found that dualistic thinking increased with age even after controlling for intelligence and education.

The findings suggested that formal education is an important variable in developing cognitive complexity. However, the Perry position of commitment remained unclear from the results of this study. Perhaps, objective measures, such as the SID, do not adequately measure commitment. One important issue worth noting was the authors' definition of experience. They operationalized experience as life experience in general rather than experience in a specific area. Life experience alone may not be enough to bring about cognitive development. However, experience gained after formal education may provide a better understanding of the role of cognitive development post-baccalaureate.

Rapps et al. (2001) tested whether knowledge base, critical thinking skills, critical thinking dispositions and experience were predictive of adult cognitive development in nurses using Perry's scheme of intellectual and ethical development, specifically dualism, relativism, and commitment. They defined experience as experience gained after nursing school.

They argued that critical thinking skills and critical thinking dispositions might not be sufficient to understand the critical thinker. They posited that adding a third variable, cognitive development, might present a more complete picture of the critical thinker. The purpose of their study was to test the proposition that critical thinking skills, dispositions and cognitive development occur during the educational process; however, experience is more salient in producing critical thinkers. Perry's (1970; 1999) theory of intellectual development provided a theoretical framework for the study.

Rapps et al. (2001) tested two different hypotheses in a sample of nurses in the field and nursing students (N = 290). Hypothesis 1 was that experience, critical thinking

skills and critical thinking dispositions contributed significantly to cognitive development. Hypothesis 2 was that the combination of experience, critical thinking skills and critical thinking dispositions explained more of the variance in commitment than at either the dualistic or the relativistic levels of cognitive development.

Cognitive development was measured using the Scale of Intellectual Development IV (SID-IV), an objective measure of Perry's scheme of intellectual development (Erwin, 1981). The alpha coefficient reliability was .84 for dualism, .70 for relativism and .72 for commitment. Empathy was not considered in the study.

The population was graduates from a Southern California baccalaureate-nursing program who completed all of their basic nursing education at the institution. They used a non-probability sample of 290 registered nurses who were either working in nursing or pursuing a postgraduate degree. For sample consideration, the nurses had to work at least 20 hours per week for a minimum of two years in the same general practice setting.

The sample included 91.8% were female, 66.4% were married 85% were baccalaureate-prepared, 53.4% were certified and 62.1% were working in an acute care setting. The mean age of participants was 34.8 (SD = 6.5). The mean number of hours worked was 36.5 (SD = 10.3). However, the authors failed to include information on ethnicity and socioeconomic class.

A hierarchical regression model was used to test the predictiveness of the variables – knowledge base, critical thinking skills, critical thinking disposition and experience – on the criterion variable, cognitive development. Three separate hierarchical regression analyses were run on SID-IV cognitive developmental factors, dualism, relativism and commitment. A set of four variables (knowledge base, skills, dispositions

and experience) were entered into the model. Based on previous studies that showed a positive relationship between knowledge and critical thinking, knowledge base was entered first. Skills and dispositions were entered simultaneously due to a lack of evidence that supported one developing before the other. Experience was entered last. The researchers' justification was that the other variables were the foundations of experience.

Knowledge base was not a significant predictor of either cognitive developmental level. Knowledge base accounted for 1.2% of the variance in dualism; 0.6% of the variance in relativism; and .08% of the variance in commitment. Critical thinking disposition was a significant predictor of all three levels of cognitive development, dualism, relativism and commitment. Critical thinking skill was a significant predictor in dualism. For cognitive development, nurses in this study reached the commitment level and achieved higher scores on commitment than found in a previous study (Erwin, 1981) conducted with college students.

The results suggested that critical thinking skills were related to dualism; critical thinking dispositions were related to dualism, relativism, and commitment; and experience was related to commitment. According to the authors, critical thinking was a function of both time and experience, calling into question the current measure of critical thinking as an outcome of formal education. Critical thinking dispositions might be an essential ingredient of cognitive development, regardless of the development level achieved.

The study provided some support for cognitive development beyond an undergraduate education (Erwin, 1983); however, there were potential threats to external

validity because the sample was homogeneous, consisting of nurses only. It is unknown whether these findings would generalize to other helping fields, like counseling and social work.

Taken together, the studies by Hood and Deopere (2002) and Rapps et al. (2001) provided important information on the role of experience in intellectual development. Age and life experience alone might be inadequate to bring about cognitive growth according to Perry's scheme. Nursing professionals (Rapps et al., 2001) continued to develop cognitively, reaching relativistic levels according to Perry's scheme; however, the community sample (Hood & Deopere, 2002) declined in cognitive abilities. Intellectual development in adults occurred with formal education, perhaps because the college environment was set up to enhance this type of growth. The support from and challenges of the college environment stimulated cognitive growth (Hood & Deopere, 2002). As students were met with diverse situations to master conceptually, they were compelled to become more flexible in their thinking. To be sure, not all students readily accepted the challenge provided by the college environment and challenges may begin what Perry called *alienation*. According to Perry (1999), three forms of alienation were retreating, escaping, and temporizing. That is, students might opt to retreat to an earlier position, escape by dropping out or temporize to avoid being challenged.

Critical Analysis

The research supported the argument that the cognitive complexity of students was related to favorable counseling variables like psychological functioning (Brendel et al., 2002), confidence and focus on counseling effectiveness (Birk & Mahalik, 1996), empathic understanding (Alcorn & Torney, 1982; Benack, 1988; Lovell, 1999a) and

more sophisticated descriptions of client characteristics (Borders, 1989); therefore, cognitive complexity might be essential in counseling and related fields (Brendel et al., 2002; Fong et al., 1997; Granello, 2002; Knefelkamp, 1974; Lovell, 1999a, 2002; Widick, 1977). The research also noted that cognitive complexity in students increased significantly at the end of their fieldwork (Brendel et al., 2002; Fong et al., 1997; Granello, 2002; Kohlberg, 1976). However, mixed information existed concerning what actually caused this increase. If students made greater gains in cognitive complexity at the end of their programs, was it due to the education they received (Perry, 1999), the work with actual clients (Fong et al., 1997), the clinical supervision (Lovell, 1999b), their chronological age (Granello, 2002; Hood & Deopere, 2002; Wilson, 1995b) or various combinations of these variables (Bernard & Goodyear, 2004)? What are the critical factors that contribute to cognitive complexity among graduate students in helping professions?

The role of demographic variables on cognitive complexity among graduate students provided mixed results. Age remained important in the literature but ethnicity was not factored-out as an important variable. Experience also provided mixed results, especially when confounded with education.

This study tested a predictive model of age, education, SCE, HSE and cognitive complexity among graduate students in helping professions. This study answered the following question: to what extent do age, education, HSE and SCE predict cognitive complexity? This research has implications for graduate training programs in the different helping professions and supervision of students in helping professions.

Chapter 2 presented research on counselor cognitive complexity, the Perry Scheme (1970; 1999), related research on the theoretical framework used in the study and more current research on Perry's scheme in counseling and related fields. Chapter 3 describes the design and methodology of the study.

Chapter Three

Design and Methodology

Organization

This chapter describes the design and methodology of the study. The chapter is divided into the following sections:

1. Logic, structure and design of study
2. Limitations
3. Research question
4. Hypotheses
5. Description of sample
6. Data collection procedures
7. Instrumentation
8. Ethical Considerations
9. Methodological assumptions
10. Analyses

Logic, Structure and Design of Study

The purpose of this study was to test a predictive model of demographic variables (education, supervised clinical experience, age and human services experience) and cognitive complexity. To test the predictive model among variables, a descriptive and web-based survey research design was used. The study employed the LEP's (Moore,

1988) Cognitive Complexity Index (CCI) scores to determine the cognitive complexity of graduate students in the helping professions.

Limitations

As stated in Chapter 1, this study might have been limited by the web-based survey method. While web-based survey methods provided some advantages in terms of cost savings, short time frame for the collection of responses, ease of transferring data into a database for analysis and the possibility of a wider geographic coverage area, they posed possible limitations. These included a lack of a population list, nonrandom sample, inability to calculate response rate and computer access to the survey (Mertler, 2001). There might be a potential limitation of lowered response rates for web-based survey relative to mail surveys (Converse et al., 2008).

Because data were gathered using only self-reports, response bias posed a potential limitation (Ellis et al., 1996). The study was correlational and only meant to find relationships between variables; therefore causal inferences could not be made from this study. In addition, it was unknown whether respondents to the survey were different from non-respondents (i.e., non-response error) because a convenience sample was employed. Another potential limitation was the lack of demographic variability in the sample in terms of gender and ethnicity.

Research Question

The research question was posed to examine whether the demographic attributes of participants had an effect on the criterion variable. The study answered the following research question: to what extent do education, supervised clinical experience (SCE), age, and human services experience (HSE) predict cognitive complexity? This question was

analyzed using a hierarchical multiple regression model. Based on a power analysis (Algina & Olejnik, 2003), a sample size of 77 was required in order to exceed a statistical power of .80 using alpha = .05 and an effect size of $f^2 = .15$.

Hypotheses

H_0: No demographic variables (education, SCE, age and HSE) will contribute to cognitive complexity.

$H_{1:}$ Education, SCE, age and HSE will predict cognitive complexity.

$H_{2:}$ The combination of education and SCE will predict more of the variance in cognitive complexity than education and age or education and HSE.

The hypothesis was based on the assumption that education and supervision were needed to increase cognitive complexity among counseling students (Bernard & Goodyear, 2004).

The hypothesis was analyzed using a hierarchical multiple regression to test the predictive model of education, HSE, age, and SCE, and cognitive complexity. Education was entered into the model first because prior studies evidenced a positive relationship between education and cognitive complexity (Belenky et al., 1986, 1997; Perry, 1970, 1999). SCE was entered next because prior studies also showed a positive relationship between SCE and cognitive complexity (Granello, 2002; Lovell, 1999b). Age was entered as a third variable since there was inconsistent evidence that age related to cognitive complexity (Granello, 2002; Hood & Deopere, 2002; Wilson, 1995b). HSE was entered last because no studies found a relationship between general experience in human services and cognitive complexity.

Description of Sample

The participants consisted of 366 graduate students in helping professions, such as social work and various forms of counseling (See Table 1). Participants were a least 22 years old (M = 35.02, SD = 10.96; N =362). The mean number of hours of supervision

Table 1

Frequencies and Percentages by Program for All Participants

	Frequency	Percent	Valid Percent	Cumulative Percent
Community Counseling	17	4.6	4.7	4.6
Counseling Psychology	15	4.1	4.1	8.7
Counselor Education	21	5.7	5.8	14.4
Marriage and Family Counseling	7	2.1	2.1	16.5
Mental Health Counseling	65	17.8	17.8	34.3
School Counseling	17	4.7	4.7	39.0
Social Work	214	58.5	58.6	97.6
Other	10.0	2.7	2.7	100.0
Total	366	100.0	100.0	

received was 36.14 hours (SD = 52.79) and the mean number of months of human services experience was 45.7141 months (SD = 59.01). The majority of the participants were Caucasian and female and a small percentage was African American/Black, Hispanics, other ethnicities and male. Table 2 gives the frequencies and percentages by ethnicity and gender. Because a convenience sample was used in this study, generalizations to the larger population of students in helping professions should be made with extreme caution.

Table 2

Frequencies and Percentages by Ethnicity and Gender for All Participants

	Frequency	Percent	Valid Percent	Cumulative Percent
Ethnicity				
African American	24	6.6	6.6	6.6
Asian American/ Pacific Islander	13	3.6	3.6	10.2
Caucasian/White	290	79.2	79.7	89.8
Latino/Hispanic	20	5.5	5.5	95.3
Other	17	4.6	4.6	100.0
Missing	2	.6		
Total	366	100.0		
Gender				
Female	315	86.1	86.8	86.8
Male	48	13.1	13.2	100.0
Missing	3	.8		
Total	366	100.0		

Data Collection Procedures

Participants were recruited in one of three ways, in person, by email or through listservs. Presentations were made to six of 12 classes at the University of South Florida (USF), whose instructors responded to an email request to use a few minutes of their class time to explain the purpose of the study and to solicit volunteers, as noted in Table 3 below.

Table 3

Course Matrix for Potential Study Participants

Program		Pre-Practicum	Practicum	Internship
Social Work		SOW 6305 Fundamentals of social work practice	SOW 6534 Field instruction I	SOW 6536 Field instruction III
Counselor Education	School Counseling	MHS 6006 Trends and principles of the counseling profession	MHS 6800 Practicum in counseling adolescents and adults	SDS 6820 Internship in school guidance
	Mental Health Counseling	MHS 6006 Trends and principles of the counseling profession	MHS 6800 Practicum in counseling adolescents and adults	MHS 6885 Internship in community agency counseling
Rehabilitation and Mental Health Counseling		MHS- 5020 Foundations of mental health counseling	RCS 6803 Practicum in counseling	RCS 6825 Internship

Sixty-six invitations to participate in the study were given out to students at USF. Invitations to participate (including the link to the survey) were also sent via email and posted on two counseling listservs and one social work listserv. Emails with link to the survey were sent to 250 counseling students and approximately 100 social work students. The listservs had a combined membership of 2,095 The Association of Baccalaureate Social Work Program Directors (BPD – 800), American Counseling Association (COUNSGRAD - 1,000), and International Association of Marriage and Family Counselors (IAMFC – 295 members). Approximately 2,500 potential participants

received invitations to participate in the study and 366 students responded to the survey. The response rate was approximately 15%. Dillman et al. (2001) reported a web-based survey response rate of 13%. It is important to note that not all of the listserv members were students that qualified for the study, participants enrolled in a counseling or social work graduate program; therefore, the response rate was based on a lower bound estimate.

Potential participants who received the invitation to participate in the study were instructed to follow a link to the web-based survey. The first page of the survey contained the an informed consent script approved by the university's institutional research review board (Appendix D). The script outlined the study concerns, student factors that might be related to cognitive complexity and the purpose of the study. All students electing to participate were instructed to "click 'yes' or click 'no' "if they did not want to participate. If participants clicked "no," they were taken to the last page. The last page offered participants a chance to enter a drawing to win an *Apple iPod Nano* by sending an email to the principal investigator. All students had the chance to enter the drawing whether or not they participated in the survey. Email addresses were not used to identify individual data. All data were reported as group data. Confidentiality was maintained to the degree permitted by the technology used. The web-based survey tool used in the study allowed only one survey entry per Internet protocol (IP) address.

Instrumentation

Two instruments were used to collect information for this study: the Demographic Questionnaire and the Learning Environment Preferences (LEP, Moore, 1987).

Demographic Questionnaire. The Demographic Questionnaire was a one-page, researcher-developed demographic survey. The demographic questionnaire contained the following items: students' age, gender, ethnicity, education experience, human services experience (practicum, internship or practice setting) and supervised clinical experience (See Appendix B).

Education was assessed based on three questions:

1. Highest degree earned (bachelors or master's degree)
2. Current degree program (i.e., M.A., M.Ed., M.S., M.S.W., Ph.D., Ed.D., other)
3. Year in current degree program.

For example, a student with a B.A. and currently in his or her first year of a M.Ed. program would have a total of 16 years of educational experience. Likewise, a student with an M.S.W. and currently in his or her third year of a Ph.D. program would have 20 years of educational experience. Calculations were made by the researcher.

HSE was operationally defined as the total number of human services experience in months. This was assessed by a single question: "What types of human services experience (i.e., employment, practicum, internship or volunteer experience) have you had in providing direct services to individuals, families or groups?" Respondents chose from a list of job titles (e.g., case manager, caseworker, counselor, psych tech, intern, social worker, volunteer, therapist) and settings (e.g., child welfare, career center, health care, mental health, school). Participants were instructed to choose the job title that most closely represented their HSE. They entered years and months of service, hours worked per week, hours of weekly individual supervision and hours of weekly group supervision for each work experience. After the data were collected, the following formula was used

to calculate total work experiences in the human services field. The formula for calculating work experience was based on a full-time work week or 40 hours. The formula was as follows: 5-10 hours/week = .25; 15-20 hours/week = .5; 25-30 hours/week = .75; and 35-40 hours/week = 1.00. The total number of months was multiplied by the hours per week percentage to obtain the numerical value for adjusted work experience. This numerical value was computed for each of the participant's work experience. The total number of HSE was calculated as the total number of work experiences in the human services field after adjusting for hours worked per week. For example, if a participant had a total of 2 years and 3 months HSE, the number entered into the spreadsheet under HSE was 27 months. However, seven of those months were gained while in an internship when the student worked only 20 hours per week. As a result, the student received half credit for those hours, resulting in a total of 3.5 months. Consequently, the student would have a total of 23.5 months of HSE. SCE was operationalized as the amount of HSE when the student received supervision. As stated earlier, supervision was assessed by two items on the demographic questionnaire (i.e., hours of weekly individual supervision and hours of weekly group supervision). The amount of HSE was converted into weeks and multiplied by the number of supervision hours reported.

Learning Environment Preferences (LEP). The LEP was an objective measure of cognitive development according to the Perry scheme. The instrument consisted of 65 questions divided into five domains: (1) view of knowledge and course content, (2) role of the instructor, (3) role of the student and peers in the classroom, (4) the classroom atmosphere and (5) the role of evaluation. Each domain contained 13 statements, which

participants rated as significant or important on a 4-point Likert-type scale. These ratings were used for item-response analysis and required to obtain a general score of overall cognitive development. At the end of each domain, participants ranked the three most important statements of that domain. These rankings yielded the Cognitive Complexity Index (CCI) and four percentage scores showing degree of preference for each of four Perry positions: Dualism (Position 2), Early Multiplicity (Position 3), Late Multiplism (Position 4), and Relativism (Position 5). The CCI index offered a single numerical score along a continuous scale of cognitive development from 200 – 500 that corresponded to the Perry positions and transitioned between the positions (See Table 4). The alpha coefficients for the LEP were reported as .72 to .84 (Moore, 1988). The test-retest reliability was .89 (Moore, 1988).

Criterion, concurrent and construct validity were found to be acceptable (Moore, 1987). Significant CCI meant criterion group differences were shown across educational levels. In terms of concurrent validity, the LEP showed a moderate correlation with the Measure of Intellectual Development (MID, Moore, 1990). Construct validity was determined by examining whether the LEP measured underlying factors that corresponded with positions 2-5 and whether the LEP measured cognitive development. Factor analysis yielded negative correlations between factor 2 and factors 1 and 3, supporting the reliability and validity of the LEP as a measure of Perry's scheme. The LEP was modified to reflect the experiences of counseling and social work students. For example, "To learn counseling" was added to the original stem "My ideal learning environment would," creating: "To learn counseling, my ideal learning environment would" (See Appendix C). For social work students, "social work" replaced "counseling"

in the stem. The adapted version was sent to the scale's author and approved in a previous study (Granello, 2002). The LEP was further modified by eliminating the item-by-item response ratings to reduce non-responsive biases. Participants were asked to rate their top three choices for each of the domains. As stated above, these were the ratings needed to obtain CCI sores and their related Perry positions.

Table 4

CCI Score Ranges as Related to Perry Positions

CCI Score Ranges	Perry Positions
200-240	POS/2 – Full Dualism
241-284	Transition 2/3
285-328	POS/3 – Early Multiplism
329-372	Transition 3/4
373-416	POS/4 – Late Multiplism
417-460	Transition 4/5
461-500	POS/5 – Contextual Relativism

Note. CCI score ranges do not include Perry positions 1, 6, 7, 8 and 9.

Ethical Considerations

All participants were informed of the purpose of this research project before their participation. Names of students were not collected. Before data collection, the research study was submitted for approval to the University of South Florida Institutional Review Board (See Appendix E). The Institutional Review Board stipulated that specific procedure be followed to protect the rights of human subjects. It was the researcher's

responsibility to ensure that each participant understood the objective and scope of the research.

Methodological assumptions

The assumptions for the study reviewed in Chapter 1 were as follows: It is necessary to assume that participants gave honest and accurate responses on the LEP and demographic questionnaire. To encourage honest responses, the LEP and demographic questionnaire was administered anonymously online. It was assumed that the sample would be representative of graduate students in counseling and social work.

Analyses

After data were collected, each completed survey was entered into a statistical spreadsheet. Each completed survey was then coded (e.g., 1001, 1002, etc.). The total LEP scores were computed using a scoring spreadsheet provided by the instrument's author. Item numbers for the top three choices across all domains were converted to keyed Perry positions. Total points were calculated for each Perry position using a pre-set weighted scale and converted to proportions based on the total number of possible points. The proportions were then converted to percentages (and rounded to integers), reflecting position sub-scores. Finally, the individual sub-scores were entered into a formula and weighing factor based on position numbers. This final step calculated the overall Cognitive Complexity Index (CCI), which was a specific numerical score on a continuous scale of 200-500, comparable to Perry's POS/2 through POS/5 (Regira, 2006).The CCI scores and corresponding Perry positions were entered into a statistical spreadsheet and matched to the demographic portion of the survey for analyses.

Analysis of Demographics. Percentages were computed and reported along with the number of cases in each category for demographic data measured at a nominal level (ethnicity, gender, graduate program) and score interval data. Means and standard deviations were computed for equal interval data (age, education, HSE and SCE).

Major analyses. To test the hypotheses, a hierarchical multiple regression was conducted with the predictor variables (age, education, HSE and SCE) and the criterion variable, cognitive complexity. Descriptive statistics were calculated for predictor and criterion variables.

Chapter 3 explained the methodology used in the study, including a description of the sample and the instrument psychometric properties. Chapter 4 outlines the results of the study.

Chapter Four

Results

This chapter outlines the results of the study. The purpose of this study was to test a predictive model among demographic variables and cognitive complexity of graduate students using William Perry's (1970; 1999) theory of intellectual development as the central framework. Cognitive theorists (e.g., Benack, 1988; Blocher, 1983; Brendel et al., 2002; Granello, 2002; Hood & Deopere, 2002; Lovell, 1999a) argued that cognitive complexity was essential for students in the helping professions to become effective practitioners; therefore the participants in this study consisted of graduate students in helping professions. These students were in training to become helping professionals in either counseling or social work. The methodology for the present study involved a web-based survey research method.

Description of the Sample

Participants were comprised of 366 graduate students from four different regions in the United States who responded to the face-to-face, email or online research invitation. Of the participants, 18.7% were from Midwestern states, 4.9% were from Northeastern states, 54.1% were from Southern states, and 22.3% were from Western states. Of the individuals responding to the research invitation, 344 (94%) respondents completed the survey. Twelve surveys were discarded because their cognitive complexity index (CCI) scores were invalid. The LEP contained five meaningless items (one per

domain), which sound complex but were improbable in terms of learning. If three of the five items were endorsed, the test was flagged as invalid on the scoring matrix (Moore, 1988).

Participants in the final sample included only graduate students in counseling and social work programs. The age of the participants ranged from 22 years to 66 years (N = 332; M = 35; SD = 11.07). The education experience of the participants ranged from 16 years to 26 years (N = 332; M = 17.61; SD = 1.86). The supervised clinical experience (SCE) for participants ranged from zero hours to 10,305.05 hours (N = 332; M = 751.17; SD = 1,445.77). The human services experience (HSE) of participants ranged from zero months to 336 months (N = 332; M = 44.49; SD = 53.56).

As shown in Table 5, participants were predominantly Caucasian/White females.

Table 5

Frequencies and Percentages by Ethnicity and Gender for Final Sample

	Frequency	Percent	Valid Percent	Cumulative Percent
Ethnicity				
African American	22	6.6	6.6	6.6
Asian American/ Pacific Islander	12	3.6	3.6	10.2
Caucasian/White	261	78.6	78.6	88.9
Latino/Hispanic	20	6.0	6.0	94.9
Other	17	5.1	5.1	100.0
Total	332	100.0	100.0	
Gender				
Female	290	87.3	88.1	88.1
Male	39	11.7	11.9	100.0
Missing	3	100.0	100.0	
Total	332	100.0		

The highest degrees held by participants were bachelor's (73.8%) and master's (26.2%). Participants were seeking master's degrees in social work (45.8%) and counseling programs (35.5%) or doctoral degrees (18.7%) in either counseling or social work. Thirty-nine percent of students seeking a master's degree in social work reported they had advanced standing in their social work program. Social work students made up 58.4% of the total sample. The other 41.6% were counseling students. The frequencies and percentages are shown in Table 6.

Table 6

Frequencies and Percentages by Program for Final Sample

	Frequency	Percent	Valid Percent	Cumulative Percent
Community Counseling	14	4.2	4.2	4.2
Counseling Psychology	13	3.9	3.9	8.1
Counselor Education	19	5.7	5.7	13.9
Marriage and Family Counseling	7	2.1	2.1	16.0
Mental Health Counseling	63	19.0	19.0	34.9
School Counseling	17	5.1	5.1	40.1
Social Work	194	58.4	58.4	98.5
Other	5	1.5	1.5	100.0
Total	332	100.0	100.0	

Perry Positions of Participants

The framework used for this study was Perry's (1999) intellectual developmental scheme. Perry's scheme was previously used with college undergraduates and more recently with graduate students. According to Perry (1999), as students developed, they moved from an absolutist view (i.e., dualism) to a pluralistic view (i.e., relativism), to a constructivist view (i.e., commitment within relativism) (Perry, 1999). The Perry

positions of the participants are illustrated in Figure 3 below. The findings in this study are as follows:

1. Only one (.3%) participant in the sample was in POS/2 (full dualism), which was consistent with Granello's (2002) sample.
2. Eight participants (2.4%) were in transition between POS/2 and POS/3.
3. Forty (12%) participants were in POS/3 (early multiplism).
4. The majority of the participants were in POS/4 (late multiplism; 38.9%) or transitioning between POS/3 (33.4%) and POS/4 (38.9%), according to the Perry (1970; 1999) scheme. This was consistent with previous research (Eriksen & McAuliffe, 2006; Granello, 2002; Moore, 1990).
5. Only three participants (.9%) were in POS/5 (contextual relativism); however, 40 participants (12%) were in transition between POS/4 and POS/5.

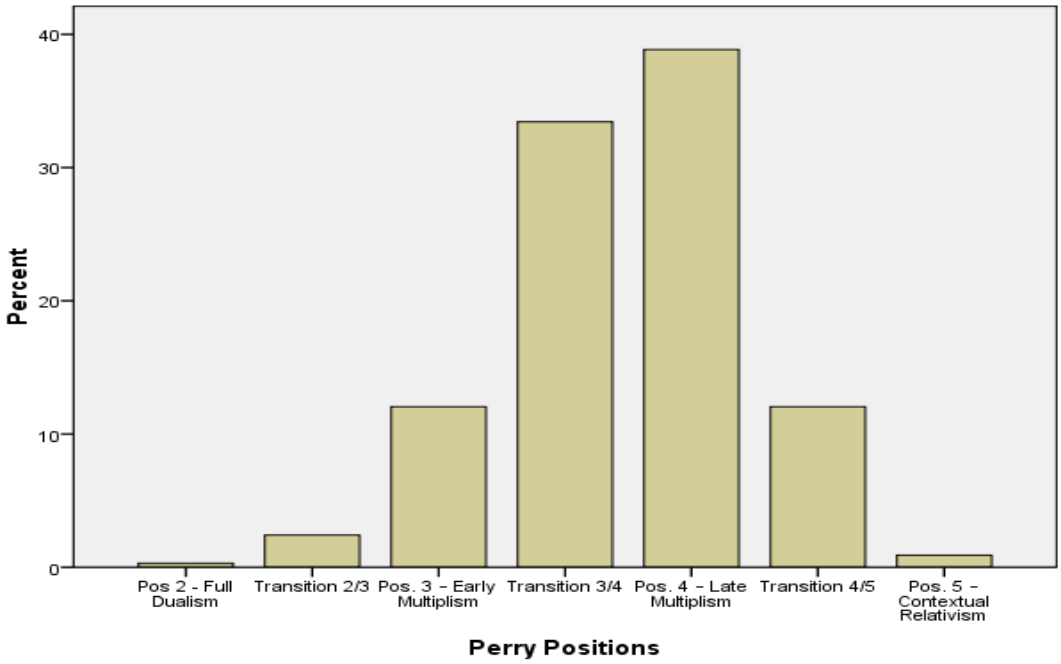

Figure 2. Study Participants' Perry Positions.

Pearson Product-Moment Correlations

Pearson Product-Moment correlations were calculated to determine the direction and strength of the relationship among variables. Based on *a priori* power analysis (Algina & Olejnik, 2003), a sample size of 67 was required in order to exceed a statistical power of .80 using alpha = .05 and an effect size of r = .3. Correlations among variables are presented in Table 7. All variables, with the exception of supervised clinical experience (SCE), showed a low but significant positive correlation with CCI scores. SCE showed a positive correlation with CCI scores but the correlation was very low and insignificant (r = .040).

Table 7

Correlations between Model Variables

	HSE (months)	Age	SCE (hours)	Education (years)	CCI
CCI					---
Education (Years)				---	.221*
SCE (hours)			---	.122*	.040
Age		---	.135*	.339*	.122*
HSE (months)	---	.322*	.649*	.335*	.168*

Note. SCE = supervised clinical experience; HSE = human services experience; CCI = Cognitive Complexity Index, * $p < .05$ (1-tailed), N = 332.

There were low to moderate intercorrelations between predictor variables. That is, education, human services experience and age were related to cognitive complexity. The finding that education was related to cognitive complexity was consistent with the finding of previous research (Brendel et al., 2002; Granello, 2002; Perry, 1970; Wilson, 1995a). The finding that human services experience and age were significantly related to cognitive complexity was inconsistent with the findings of previous studies that found no significant relationship between the two variables and cognitive complexity among counselors (Granello, 2002) and technical school instructors (Wilson, 1995b). However, the finding regarding the relationship between age and cognitive complexity was consistent with a previous study that found a significant correlation between age and cognitive complexity (Hood & Deopere, 2002). The finding regarding clinical supervised experience was surprising and inconsistent with earlier assumptions that supervised experience is related to cognitive complexity (Bernard & Goodyear, 2004).

To determine the magnitude of the effects of the variables, squared correlations was computed (See Table 8). One squared correlation worth noting was between human services experience (HSE) and SCE (r^2 = .42). There was a 42% overlap between the two variables, which was the highest shared contribution in the model.

Multicollinearity was investigated. As a rule of thumb, intercorrelations.80 and above might signify multicollinearity problems (Mertler, Meriter, & Vannatta, 2001). Because all intercorrelations were well below .80, multicollinearity was not deemed to be a problem. In addition, variance inflation factors (VIF) and tolerance (1/VIF) were carefully analyzed. VIF's of 5 or greater and tolerance of .10 or less would signify potential collinearity problems (Stevens, 1999). VIF's were between 1.0 and 2.1.

Tolerance was between .48 and 1.0. Given these findings, it was concluded that multicollinearity was not a major problem.

Table 8

Squared Correlations between Model Variables

	HSE (months)	Age	SCE (hours)	Education (years)	CCI
CCI					---
Education (Years)				---	.048
SCE (hours)			---	.015	.002
Age		---	.018	.115	.015
HSE (months)	---	.104	.421	.112	.028

Note. SCE = supervised clinical experience; HSE = human services experience; CCI = Cognitive Complexity Index, $N = 332$.

Predictive Model Testing

Several assumptions had to be met in order to test a linear regression model. It is important to note that the assumptions of linear regression models were based on the population and not the sample (Cohen, Cohen, West, & Aiken, 2003). The distribution for the criterion variable, cognitive complexity, was examined to assess for normality assumption. The Kolmogorov-Smirnov (K-S) test was used to test the assumption of normality ($p = .259$). The results of the test showed that CCI scores did not significantly

depart from normality. Visual inspection of the histogram distribution confirmed the results of the K-S test (*M* =1.16; *SD* = 0.99), illustrated in Figure 2.

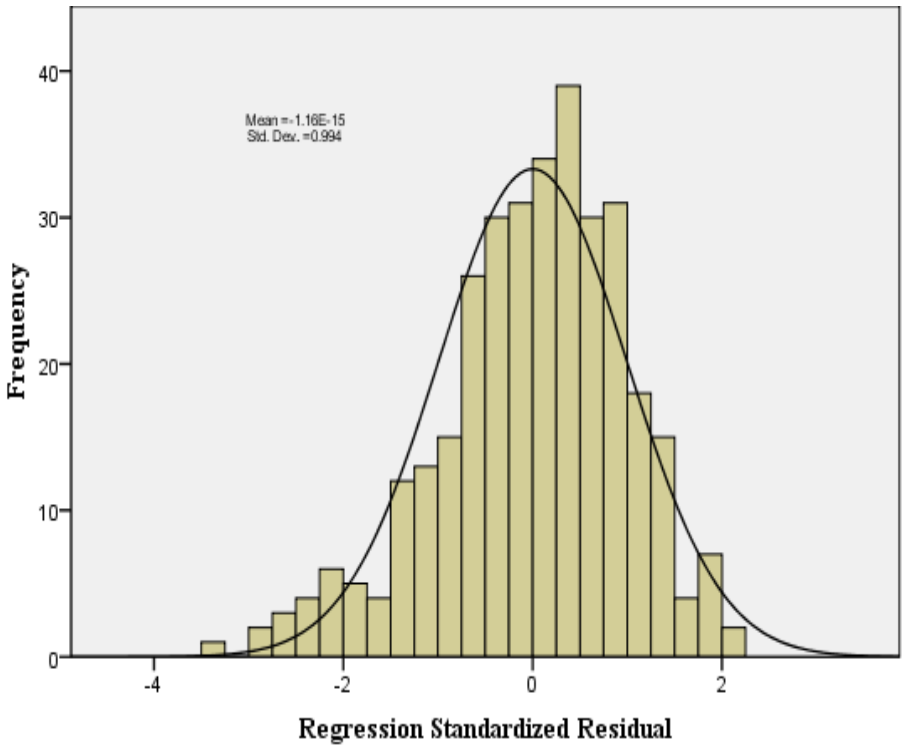

Figure 3. Histogram Distributions of CCI Scores.

However, the test for normality with the predictor variables revealed significant P values for all predictor variables, which signified that the sample might not have come from a Gaussian population. However, it is important to note that it is common to get significant findings in tests of normality in large samples (Pedhazur, 1997). Because of the robustness of the linear regression models, inferences could still be made without error when there was moderate violations to these assumptions (Cohen et al., 2003).

To test the hypotheses, a hierarchical regression analysis was conducted. The regression solution was assessed for outliers and influential points using standardized

residuals, hat elements and Cook's Distance. There were no outliers beyond the acceptable levels (Pedhazur, 1997).

The research questions were posed to examine whether participant demographic attributes predicted the criterion variable. This study answered the following research question: To what extent do age, education, HSE, and SCE predict cognitive complexity? Two hypotheses were formulated. Hypothesis 1 was that education, SCE, age, and HSE, would predict cognitive complexity. Hypothesis 2 was that the combination of education and SCE would predict more of the variance in cognitive complexity than education and age or education and HSE. This hypothesis was based on the assumption that education and experience are needed to increase cognitive complexity among counseling students (Bernard & Goodyear, 2004). These hypotheses were analyzed using a hierarchical multiple regression to test the predictive model of age, education, experience and cognitive complexity. The results of the regression model are presented in Table 9.

Education was entered into the model first because prior studies revealed a positive relationship between education and cognitive complexity (Belenky et al., 1986, 1997; Perry, 1970, 1999). Education accounted for 4.9 % of the variance in cognitive complexity F (1, 330) = 16.968, $p < .05$. As expected, education significantly predicted cognitive complexity in this study. This was consistent with prior research that found that education experience might have a significant effect on cognitive complexity (Brendel et al., 2002; Granello, 2002; Lovell, 2002; Perry, 1970; Wilson, 1995a).

Table 9

Results for Cognitive Complexity Regression Model

Model	*R*	*R* Square	Adjusted *R* Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	*F* Change	*df1*	*df2*	Sig. *F* Change
1	.218[a]	.048	.045	41.67	.048	16.54	1	330	.000
2	.219[b]	.048	.042	41.73	.000	.07	2	329	.787
3	.224[c]	.050	.042	41.74	0.00	.83	3	328	.363
4	.251[d]	.063	.051	41.53	.013	4.40	4	327	.037

a. Predictors: (Constant), Education experience

b. Predictors: (Constant), Education experience, Supervised experience (hours)

c. Predictors: (Constant), Education experience, Supervised experience (hours), Age

d. Predictors: (Constant), Education experience, Supervised experience (hours), Age , Human services experience (months)

SCE was the second step because prior studies showed a positive relationship between SCE and cognitive complexity (Granello, 2002; Lovell, 1999b). In this study, however, SCE did not account for any of the variance cognitive complexity F (2, 329) = .063, p = .803, r^2 change = .000. This finding was inconsistent with the study hypothesis and also inconsistent with the assumptions that cognitive complexity and SCE shared a close relationship (Bernard & Goodyear, 2004). Age was entered at the third step because there was inconsistent evidence that age was related to cognitive complexity (Granello, 2002; Hood & Deopere, 2002). Age accounted for only an additional .2% of the variance F (3, 328) = .820, p = .366, r^2 change = .002. In terms of the predictive model, this finding was inconsistent with the hypothesis and Hood and Deopere's (2002) study which found that age was predictive of cognitive complexity. HSE was entered at the last step because no studies that found a relationship between general experience in human services and

cognitive complexity. HSE accounted for an additional 1.2% of the variance in cognitive complexity (β = .159, t = 2.078, p < .05). As hypothesized, HSE significantly predicted cognitive complexity in this study. This finding was inconsistent with Granello's (2002) study that found no relationship between HSE and cognitive complexity. However, the findings were consistent with the assumption that work experience with actual clients might be a good predictor of cognitive complexity. The summary table of the regression model is presented in Table 10.

For hypothesis 1, education, SCE, age and HSE will predict cognitive complexity, the combined model accounted for 6.4% of the variance in cognitive complexity. Education and human services significantly predicted cognitive complexity among graduate students in the study. Contrary to expectations, age and SCE did not significantly predict cognitive complexity among graduate students in the study.

Hypothesis 2, the combination of education and SCE will predict more of the variance in cognitive complexity than education and age or education and HSE, was not significant. This hypothesis was based on the assumption that education and supervision experience were needed to increase cognitive complexity among counseling students (Bernard & Goodyear, 2004). Contrary to the expectation, the combination of SCE F (1, 329) = .063, p = .803, r^2 change = .000 and education F (1, 330) = 16.968, p < .05 did not account for most of the variance in the model. Interestingly, the combination of HSE (β = .159, t = 2.078, p < .05) and education accounted for most of variance in the model, 6.1%. According to the findings, work with actual clients and education might predict cognitive complexity among graduate students in the helping fields.

Table 10

Summary of Hierarchical Regression Analysis for Variables Predicting Cognitive Complexity (N = 332)

Variable	*B*	SE B	*β*
Step 1			
Education	4.87	1.18	.221*
Step 2			
Education	4.829	1.19	.219*
SCE	.000	.002	.014
Step 3			
Education	4.46	1.26	.202*
SCE	.000	.002	.009
Age	.202	.223	.052
Step 4			
Education	3.74	1.30	.170*
SCE	-.003	.002	-.087
Age	.096	.227	.025
HSE	.127	.061	.159*

Note. SCE = supervised clinical experience; HSE = human services experience; R^2 = .049 for Step 1; ΔR^2 = .000 for Step 2; ΔR^2 = .002 for Step 3; ΔR^2 = .012 for Step 4; *p < .05.

Additional Analyses

One-way Analyses of Variance (ANOVAs) were conducted for the variables ethnicity and gender to examine their effects on cognitive complexity. Although these variables were not part of the major analysis, it was important to examine their influence on CCI scores because of inconsistent results in prior studies. Means and standard deviations for ethnicity and gender are presented in Table 11. There were no significant differences between different ethnicities on mean CCI scores F (4, 327) = .460, p = .498.

Table 11

Mean CCI Scores by Ethnicity and Gender

	N	Mean	Standard Deviation	F	ES	Power
Ethnicity				.460	.12	.34
African American/Black	22	354.41	47.24			
Asian American/Pacific Islander	12	373.25	49.38			
European American/White	261	373.49	42.24			
Latino/Hispanic	20	367.20	37.30			
Other	17	371.94	43.26			
Gender				3.250	.31	1.0
Female	290	370.03	42.81			
Male	39	383.13	41.03			
Total	329	371.58	42.75			

Note: CCI = Cognitive Complexity Index; ES = Effect Size. The total *N* for Gender was 329 due to missing demographic data.

Effect sizes were calculated to determine the magnitude of the relationship between variables (Cohen, 1998). There was a medium effect size for European Americans and African Americans (Cohen's $d = .41$). There was a small effect size for European Americans and Latino Americans (Cohen's $d = .14$). Gender also revealed no significant differences in cognitive complexity $F\ (1, 327) = 3.25$, $p = .072$. The gender effect size was small to medium (Cohen's $d = .31$).

ANOVAs were also conducted for program degree (Master's, Ph.D.) and graduate program to examine their effects on cognitive complexity. Within group comparison were conducted for counseling and social work programs. No significant differences were found between doctoral and master's level counseling students $F\ (1, 136) = 3.88$, $p = .051$. Social work doctoral students showed higher mean CCI scores than social work master's students $F\ (1,192) = 16.68$, $p < .05$. Since counseling consisted of different

programs, these groups were compared. No significant differences were found among counseling doctoral students F (1, 16) = .132, p = .877; and no significant differences were found among counseling master's students F (6, 112) = 3.27, p = .093. Table 12 illustrates within-group comparisons.

Table 12

Within-Group Comparisons of Mean CCI Scores by Programs

Variable	N	Mean	Standard Deviation	*F*	ES	Power
Counseling				3.88	.49	.98
Master's	119	364.63	43.24	1.86	.32	.99
Community Counseling	14	362.79	35.36			
Counseling Psychology	10	379.10	36.04			
Counselor Education	7	385.43	29.01			
Marriage and Family Counseling	7	360.71	30.03			
Mental Health Counseling	59	369.36	45.74			
School Counseling	17	336.94	37.47			
Other	5	355.80	67.73			
Total	119	364.63	43.24			
Doctorate	19	385.37	38.34	.132	.13	.07
Counseling Psychology	3	389.33	15.95			
Counselor Education	12	381.83	38.30			
Mental Health Counseling	4	393.00	55.92			
Total	138	367.49	43.07			
Social Work				16.68*	.29	.98
Master's	151	368.68	38.52			
Doctorate	43	397.07	47.16			
Total	194	374.78	42.18			

Note: CCI = Cognitive Complexity Index; ES = Effect Size; *N*=332; *p < .05

Between-groups comparisons were conducted for counseling and social work students. Table 13 shows between-groups comparisons of programs. Counseling students did not differ from social work students on measures of cognitive complexity when both master's and doctoral levels were combined F (1, 330) = 1.78, p = .183. When doctoral counseling students were compared with doctoral social work students, no significant difference was found F (1, 60) = .903, p = .346. There were no significant differences between counseling and social work students at the master's level F (1, 268) = .579, p = .447.

Table 13

Between-Group Comparisons of Mean CCI Scores by Programs

Variable	N	Mean	Standard Deviation	*F*	ES	Power
Combined Levels				1.78	.18	.90
Counseling Doctoral/Master's	138	367.49	43.07			
Social Work Doctoral/Master's	194	374.78	42.18			
Total	332	371.14	42.63			
Doctoral Students				.903	.28	.58
Counseling	19	385.37	38.34			
Social Work	43	397.07	47.16			
Total	62	391.22	42.75			
Master's Degree				.579	.10	.37
Counseling	119	364.63	43.24			
Social Work	151	368.68	38.52			
Total	270	366.68	40.88			

Note: CCI = Cognitive Complexity Index; ES = Effect Size; N = 332

Between-groups comparisons were also conducted among counseling and social work students at different levels. Counseling doctoral students did not differ significantly from social work master's students in terms of mean CCI scores F (1, 168) = 3.27, p = .072. However, social work doctoral students had significantly higher mean CCI scores than counseling master's students F (1, 160) = 16.93, $p < .05$. Table 14 shows the cross level group comparisons.

Table 14

Cross-Level Group Comparisons of Mean CCI Scores by Programs

Variable	*N*	Mean	Standard Deviation	*F*	ES	Power
Comparison 1				3.27	.42	1.0
Counseling Doctoral	19	385.37	38.34			
Social Work Master's	151	368.68	38.52			
Total	170	377.03	38.43			
Comparison 2				16.93*	.71	1.0
Counseling Master's	119	364.63	43.24			
Social Work Doctoral	43	397.07	47.16			
Total	162	377.03	45.20			

Note: CCI = Cognitive Complexity Index; ES = Effect Size; N = 332; *p < .05

Post hoc comparisons revealed significant differences between graduate degree programs. Social work doctoral students had significantly higher CCI mean scores than master's level students in mental health, school counseling and social work F (11, 320) = 3.175, $p < .05$. School counselors had the lowest mean CCI score of all the programs; however, this difference was not statistically significant when compared to students in master's level programs. However, when two master's programs, mental health

counseling and school counseling, were compared, the effect size was large (Cohen's *d* = .74). The effect size for social work and school counseling master's programs was also large (Cohen's *d* = .65). This finding was consistent with prior research. Granello (2002) found that school counselors had lower CCI scores than other students and that school counselors showed a decrease in cognitive complexity, while other students made gains in cognitive complexity. When school counseling was compared to the combined groups (master's and doctoral programs) counselor education, counseling psychology and social work had significantly higher mean CCI scores, F (7, 324) = 2.375, $p < .05$. There were no significant differences between social work doctoral students and counseling doctoral students.

Because some doctoral students had not yet earned master's degrees and some master's students had previously attained master's degrees in other areas, further analysis examined the effects of earned degrees on cognitive complexity. It was found that students who had earned a master's degree had significantly higher CCI scores than students who had earned only a bachelor's degree F (1, 330) = 21.90, $p < .05$. This is illustrated in Table 15.

Table 15

Mean CCI Scores and Results of Analysis of Variance by Earned Degree

Variable	*N*	Mean	Standard Deviation	*F*	ES	Power
Earned Degree				21.90*	.58	1.0
Bachelor's	245	365.42	40.15			
Master's	87	389.57	44.59			
Total	332	371.75	42.64			

Note. CCI = Cognitive Complexity Index; ES = Effect Size; *N* = 332; *p < .05

This was consistent with the findings in the predictive model. More education was related to higher cognitive complexity.

Chapter 4 presented the findings of this study, discussed whether the findings were consistent with the research hypotheses and prior research. Chapter 5 will discuss the findings in more detail along with implication for practice and further research. The limitations of the study will also be discussed.

Chapter Five

Discussion

This chapter provides a detailed discussion of the findings. The chapter is divided into the following sections:

1. Purpose of the Study
2. Perry's Positions of Participants in the Study
3. Summary of the Predictive Model
4. Summary of Analyses of Variance (ANOVAs)
5. Conclusions
6. Limitations
7. Implications
8. Recommendations for Future Research

Purpose of the Study

Given the findings from prior research that students make more gains in cognitive complexity at the end of their graduate programs (Brendel et al., 2002; Fong et al., 1997; Granello, 2002; Kohlberg, 1976; Lovell, 1999b), the question remained of what variables contributed to that increase? Given education was the only constant in past models, it was important to control for the effects of education in the research design, while examining whether work with actual clients (Fong et al., 1997), the amount of supervision received (Lovell, 1999b), chronological age (Granello, 2002; Hood & Deopere, 2002) or various

combinations of these variables (Bernard & Goodyear, 2004) contributed to cognitive complexity. The research question posed for this study was: to what extent do education, supervised clinical experience (SCE), age, and human services experience (HSE) predict cognitive complexity? Two hypotheses were formulated based on this question.

1. Hypothesis 1: Education, SCE, age and HSE will predict cognitive complexity.
2. Hypothesis 2: The combination of education and SCE will predict more of the variance in cognitive complexity than education and age or education and HSE.

To answer this question and test the hypotheses, a web-based survey was conducted with a sample of counseling and social work students in graduate training programs. A hierarchical multiple regression analysis was used to test the predictive model of education, SCE, age, HSE and cognitive complexity. One-way analyses of variance (ANOVAs) were also conducted to examine the effects of gender, ethnicity and program variables on a measure of cognitive complexity.

Summary of the Predictive Model

Hypothesis 1 was education, SCE, age and HSE would predict cognitive complexity. Contrary to the hypothesis, SCE and age were not significant predictors of cognitive complexity in this study; although, age showed a significant and positive correlation with cognitive complexity. As hypothesized, education and HSE were significant predictors of cognitive complexity. A discussion of the regression solution is provided below.

Education. Consistent with a more recent study (Hood & Deopere, 2002), education accounted for a significant proportion of the variance in cognitive complexity in the present model, which might be taken as support for Perry's (1970; 1999). That is, higher education was related to higher cognitive complexity. Other studies have found a similar relationship between education and cognitive complexity (Granello, 2002; Wilson, 1995a). A majority of the graduate students in the study were in early to late multiplism, according to Perry's model. This was consistent with the results of other research. Moore (1990) examined psychology graduate students and found that they also exhibited multiplistic thinking. Granello (2002) examined cognitive complexity among counseling graduate students and found that they enter counseling programs at early multiplism and progress to late multiplism by the end of their programs. Eriksen and McAuliffe (2006) also examined counseling students and found that they ranged from early multiplism to transitioning between late multiplism and contextual relativism. For students in multiplism, there is a decrease in reliance on authority and an increase in autonomous thinking. Authority is seen as the authority on the proper methods to find the right answers instead of having the right answers.

Supervised Clinical Experience. Surprisingly, SCE showed a non-significant correlation with cognitive complexity, and as a result did not account for any additional variance in predicting cognitive complexity. This suggests that clinical supervision is not directly related to cognitive complexity. The finding in the present study was inconsistent with a previous study that found a significant relationship between supervisory experience and cognitive complexity (Lovell, 1999b).

One possible explanation for the finding in this study is that respondents did not distinguish between clinical supervision and administrative supervision. In a more recent dissertation study, individuals reported they were receiving clinical supervision (i.e., supervision to increase counseling skills) when they were receiving administrative or managerial supervision (i.e., supervision to increase organization goals) (Teufel, 2007). Teufel (2007) observed supervision sessions and found that what was being reported as clinical supervision was very different from what was actually occurring in the supervision session. She observed that much of time in the session was spent on reporting productivity as opposed to the supervisees' development. Therefore, what was reported might have depended heavily on whether students viewed formal supervision as clinical, administrative, or both.

Age. Age was significantly and positively correlated with cognitive complexity. This was inconsistent with previous studies that found no relationship between age and cognitive complexity (Granello, 2002; Wilson, 1995b). On the other hand, Hood and Deopere's (2002) found a correlation between age and cognitive complexity, albeit in the opposite direction. They found a significant positive correlation between age and dualism and a significant negative correlation between age and relativism. Their findings suggested that age was negatively related to cognitive complexity, which was contradictory to the findings in the present study.

In the regression model, age accounted for a small but insignificant change in cognitive complexity in the present study. Age was entered into the regression equation at the third step and did not contribute to any unique variance that was not already accounted for by education, which was entered at the first step. If age were entered into

the equation as the first step, it could have accounted for a significant proportion of the variance until education was entered. This was inconsistent with Hood and Deopere's (2002) study in which age accounted for a significant proportion of the variance when both education and intelligence were controlled.

Human Services Experience. HSE showed a significant positive relationship with human cognitive complexity and explained a small proportion of the variance in cognitive complexity. The results of this study were consistent with the findings of Rapps et al. (2001) that work experience was related to cognitive complexity. However, Granello (2002) found no relationship between HSE and cognitive complexity. One possible explanation for the inconsistent findings was that, in the previous study, prior human services experience might have been too broad to capture participants' work with actual clients. In the current study, the question regarding human services experience was specific to direct practice. In order to capture participants' work with actual clients, HSE was operationalized by a single question on the demographic questionnaire: "What type of human services experience (i.e., employment, practicum, internship, and/or volunteer experience) have you had in providing *direct services* with individuals, families, or groups?" One study found that cognitive complexity increased significantly after students began practicing in the field (Rapps et al., 2001). The findings in the current study provided some support for this notion. Therefore, human services experience after training might be a variable worth further examination.

Hypothesis 2 was that the combination of education and SCE would predict more of the variance in cognitive complexity than education and age or education and HSE would. This hypothesis was based on the assumption that education and experience were

needed to increase cognitive complexity among counseling students (Bernard & Goodyear, 2004). The results showed that education and HSE and not education and SCE explained the greatest proportion of the variance in the regression model. Conceptually, experience under supervision was an important factor in bringing about cognitive change but the data did not support this, possibly for the reasons discussed earlier.

Summary of Analyses of Variance (ANOVAs)

Additional analyses regarding gender and ethnicity were conducted due to inconsistent findings regarding these variables in the literature. In addition, analyses regarding cross-discipline analyses were conducted to examine difference between counseling and social work programs and program levels.

Gender. The results of the analysis of gender revealed there was no significant gender difference. Although the finding was not significant, males were higher in cognitive complexity than females with a small to medium effect size. In terms of Perry positions, males tended to be POS/4 and females tended to be transitioning between POS/3 and POS/4. However, it could be argued that the way in which university classrooms are set up often led to self-doubt and alienation among women; therefore, women sought to gain a voice instead of searching for truths (Belenky et al., 1986).

Ethnicity. The results of the analysis of ethnicity revealed that there were no significant ethnic-related differences for cognitive complexity in the present study, but reasonable effect sizes. European Americans were higher in cognitive complexity than Asian Americans, Latino American and African Americans, respectively. European and Asian Americans tended to be at POS/4 and African and Latino Americans tended to be transitioning between POS/3 and POS/4. However, it was important to note that cognitive

development in the college years might be due to cultural expectations (Zhang & Watkins, 2001). That is, student cognitive complexity may reflect the beliefs, values, and traditions of the student's racial/ethnic group, which may impact the ways in which they develop in the educational environment.

Graduate Programs. The results of the cross-discipline analysis of social work and counseling programs were as follows:

1. There was no significant difference between counseling and social work students at the master's level and counseling students and social work students at the doctoral level. They both tended to be transitioning between POS/3 and POS/4.
2. School counselors scored lower in terms of cognitive complexity than students in other programs. Although this was not a significant finding, it was important to note that this finding was consistent with prior research (Granello, 2002).
3. Social work doctoral students were significantly higher in cognitive complexity than both master's level social work students and master's level counseling students. Social work doctoral students tended to be in POS/4 and master's level students tended to be in transition between POS/3 and POS/4.
4. There was no significant difference between counseling doctoral students and master's level students. Counseling doctoral students tended to be in POS/4 and master's level students tended to be in transition between POS/3 and POS/4 as stated earlier; however, the mean cognitive complexity scores of counseling doctoral students were lower than social work doctoral students. One possible explanation for this finding was the small sample size of doctoral counseling

students included students who had not received master's degrees; whereas, all doctoral social work students had received master's degrees.

Previously Earned Degree. To further explore the effect of prior education, means were examined for earned degrees. The analysis of earned degrees showed that students who had received a master's degree scored higher on cognitive complexity than students who had bachelor's degrees. This lent some support to the importance of educational experience in cognitive development. It stands to reason that students who have more education are exposed to more diversity, especially in counseling where there is ambiguity. Therefore, students might become increasingly flexible in their worldview, embracing diversity and more complex situations.

Conclusions

The findings in the current study combined with previous research provided partial support for Perry's scheme and it's applicability to graduate students. Consistently, studies have found that most graduate students enter master's programs beyond dualistic thinking. On average, master's level students in the current study were in transition between early and late multiplism. However, there is evidence that they might not reach relativistic thinking before they are at the end of their programs or beyond graduate school (Skovholt & Ronnestad, 1992). Relativistic thinking represents a fundamental shift in thinking (Perry, 1999). Therefore, it was not surprising that only doctoral students in the present study endorsed relativistic thought. What was surprising was that only three doctoral students were at this stage, which meant that the majority of the doctoral students had not yet made that shift in thinking. On average, doctoral students were firmly in late multiplism.

Education level was found significantly to predict cognitive complexity. Education was the only variable that was significant at each stage of the regression model. In Perry's study of Harvard undergraduate students, he found that students reached relativism at about their senior year. However, more recently, Granello (2002) and Eriksen and McAuliffe (2006) found that students in counseling master's programs were multiplistic in their thinking. Similar results were found for psychology graduate students (Moore, 1990). The results of the present study confirmed these findings. Some students were beyond multiplism in the study; however, they were mostly Ph.D. students and second year master's level students. Master's students were in early to late multiplism, both within and between programs, which provided some evidence that graduate students in different programs in the helping professions possessed similar levels of cognitive complexity. In addition, higher levels of cognitive complexity, such as relativism, might occur when a student was at the end of their program or once he or she had completed training (Skovholt & Ronnestad, 1992). This further suggested that Perry's original sample of undergraduate students might be very different from the average college student.

Age, as concluded in past studies (Granello, 2002; Wilson, 1995b), did not seem to have a significant effect on cognitive complexity. However, a zero-order correlation in the present study suggested that age had a direct positive relationship with cognitive complexity. This was consistent with a previous study that showed that age was correlated with cognitive complexity and had predictive power when education was controlled (Hood & Deopere, 2002).

Education was a better predictor of cognitive complexity and accounted for more of the variance than human services experience, age, and supervised clinical experience combined. However, experience, specifically human services experience, could be an important factor in increasing cognitive complexity in students and practitioners but more research is needed before reaching that conclusion. On the other hand, supervised clinical experience did not account for any changes in cognitive complexity, suggesting that supervised clinical experience might not be a factor in student cognitive complexity. The results of the study warrant additional examination of experience-related variables and their relationship to cognitive complexity.

Limitations

Although the study confirmed the results of earlier studies, there were several limitations that must be noted. The study was correlational; therefore no causal inferences could be made from the results. The data were gathered from a homogeneous population of graduate students in counseling and social work. Because a convenience sample was used, it was unknown whether respondents to the survey were different from non-respondents (i.e., non-response error). Additionally, there was a lack of demographic variability in the sample. Most of the sample consisted of European Americans and female participants. Although this might be a reflection of the counseling and social work fields in general, it limited the researcher's ability to examine issues of gender and ethnicity more closely and to make meaningful inferences (Granello, 2002).

Web-based survey methods may pose possible limitations, for example, lack of a population list, nonrandom sample, inability to calculate response rate and computer access to the survey (Mertler, 2001). There might be a potential limitation of lowered

response rates for web-based survey relative to mail surveys (Converse et al., 2008). Because data were gathered using only self-reports, response bias posed a potential limitation (Ellis et al., 1996).

Finally, the study might also be limited by the instruments used. As discussed earlier, the operationalization of SCE might not have measured the actual clinical supervision received. It could have measured both clinical and administrative supervision.

Implications

Several implications were based on the findings that education experience and HSE significantly predicted cognitive complexity and previous research.

Although there is much work to be done regarding our understanding of the true impact of baseline cognitive complexity on outcome measures, what has been speculated is that students with higher cognitive complexity might be faster and more efficient at integrating new knowledge needed for further development (Granello, 2002; Perry, 1999). Given that experience is related to cognitive complexity, counseling admissions committees might consider work experience as criteria for admitting students into graduate programs.

It might be important for counselor educators to have an understanding of adult cognitive development and cognitive complexity so that they could provide the best learning environments to promote learning in the classrooms. Perry (1999) stated that development might occur in the educational environment because of the diversity on most college campuses. But how could educators assure cognitive development of students if it were left up to chance (Fong et al., 1997)? Earlier studies proposed

developmental instruction as a way of helping student cognitive development (Granello & Hazler, 1998; Knefelkamp, 1974).

Instructors with knowledge of cognitive development might assess their students' baseline cognitive complexity at the beginning of the class by using measures like the Learning Environment Preferences or the Measure of Intellectual Development. Based on the work of Knefelkamp (1974), Rapaport (1984) offered a creative way that instructors could challenge students and also support them once they have established a baseline for students in the class. Rapaport (1984) suggested that instructors offer students choice in assignments that support their development level but challenge them by requiring that they considered other ideas about one position above their own. This induces a disequilibrium, which might help students develop cognitive complexity. Students interacted with their environment and responded to challenges by assimilating to existing cognitive framework or accommodating the framework itself (Piaget, 1967).

Supervisors might also be trained to provide a challenging and supportive supervisory environment. The supervisory environment has been a major area of study among counselor supervision researchers, and the importance the supervisory environment has been well-documented (e.g., Loganbill et al., 1982; Stoltenberg, 1981; Worthington & Roehlke, 1979). However, trainee models to promote cognitive complexity among students might be more effective if they are rooted in cognitive developmental theory and include chances for students to gain experience while working with actual clients. Brendel et al. (2002) studied a counselor education program that used a deliberate psychological education (DPE) component to train counselors. They found that cognitive complexity among students significantly increased after two years.

DPE is an educational model designed specifically to enhance cognitive complexity among students. The model challenges students' perceptions of the world by providing conditions for developmental growth. The model includes role-taking experience in helping--take others' point of view, guided reflection--focusing on meaning-making, critical-dialectical analysis and self-evaluation, a balance between action and reflection through actual practice and clinical supervision, continuity--opportunities to practice and receive feedback and instruction in supervision and a challenging and support environment (Brendel et al., 2002).

It might be important for students to seek out educational models such as DPE. Students might also seek out more "hands on" experience with diverse client populations. More interactions with clients in the field performing counseling tasks might aid in increasing cognitive complexity beyond training programs. Blocher (1983) and Fong et al. (1997) pointed to the importance of student work experience with actual clients as a mechanism for cognitive development. However, it is important that students advocate on their own behalf to get the types of experiences that might help them develop cognitive skills needed to become effective practitioners; especially when internship settings do not allow for such experiences.

Finally, the findings in this study, with regards to SCE, might magnify the need for more research on the two types of supervision conducted in agencies. It is well known that administrative supervision is readily available in agencies and clinical supervision is often neglected, although both are important. As Teufel's (2007) study pointed out, more administrative supervision was being conducted than clinical supervision. Another study (Page, Pietrzak, & Sutton, 2001) found that only 13% of school counselors were

receiving individual clinical supervision and only 11% were receiving group clinical supervision as opposed to 100% who received administrative supervision.

Recommendations for Future Research

Though, the results of the study add to the knowledge base of cognitive developmental research, there is still much work to be done. The following are recommendation for future research:

SCE was very hard to measure with objective measurements, mainly because supervisors, students and practitioners might not distinguish between clinical supervision and administrative supervision. Therefore, it is recommended that, when constructing demographic surveys, it is important that the questions are not ambiguous. In order to minimize ambiguity, a cognitive interview during the piloting of the study is suggested. In the cognitive interview, the researcher might ask probing questions related to the questions on the survey or responses given by participants (Caspar, Lessler, & Willis, 1999). The interview might decrease survey error. A qualitative component might also serve to decrease survey error. A qualitative component might provide the researcher with the opportunity to ask participants questions regarding their work and supervision experiences that are not possible with a demographic survey. In addition, a qualitative component could help to examine what types of activities are prevalent in supervision, and the impact these activities might have on cognitive complexity.

This study and a previous study (Granello, 2002) found lower mean cognitive complexity scores for students in school counseling programs when compared to other counseling programs. To this end, it would be important to understand these findings.

Therefore, future research might closely examine the experiences of school counseling students.

Another recommendation for future research is to continue to conduct gender and ethnicity studies. Given the effect sizes of gender and ethnicity in this study, cognitive complexity, as it relates to these variables, may be an area worth further investigation. More emphasis might be placed on comparisons between males and females and different ethnicities to continue to address the application of the Perry scheme to women and ethnic minorities (Baxter Magolda, 1992; Belenky et al., 1986; Johnson, 1999; King & Kitchener, 1994). However, the lack of variability in sampling in the graduate programs in counseling and social work may require that researchers employ an over sampling method to assure increased balance in terms of group sizes. In over sampling, members of underrepresented groups were invited to participate in larger numbers in the research, and enabled researchers to make inferences from the data (Palta, 2003).

Finally, cognitive complexity interactions might be a good direction for future research because it is not yet known what impact interactions between supervisors and supervisees might have student learning or other outcomes. Supervisors' level of cognitive complexity may play an important role in determining the cognitive complexity of students. That is, supervisors with high cognitive complexity may be better equipped to provide the right type of environment to stimulate cognitive growth in supervisees. On the other hand, supervisees with low cognitive complexity may hinder cognitive growth. That is, supervisors who are rigid and inflexible may not be able to make the necessary changes to allow for growth of the supervisee. To this end, it would be important to examine how antecedents impact the process and outcome of supervision, such as

working alliance and supervision satisfaction. This hopefully would lead to more research examining the impact of supervision on client outcomes.

In closing, counselor cognitive complexity is a phenomenon worth further investigation. The regression model accounted for only about 6% of the variance in cognitive complexity; therefore more research is needed to examine other variables that might predict cognitive complexity in hopes of constructing a parsimonious cognitive developmental model of supervision.

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Appendices

Appendix A: The Perry Scheme of Cognitive Development

	Dualism	Early Multiplism	Late Multiplism	Relativism
View of Knowledge	All knowledge is known; there are clear right/wrong answers	Most knowledge is known; there are right/wrong ways to find answers	Most knowledge is not known; therefore "everyone is entitled to own opinion"	All knowledge is "contextual"; within a context there are right/wrong answers and rules for good thinking
View of Instructor	Source of knowledge	Source of right way to get knowledge	Source of the thinking process or irrelevant	Source of expertise
View of Student Role	To receive knowledge; to demonstrate knowledge	To learn how to learn, to work hard	To learn to think for oneself, to support opinions	To study different contexts, see different perspectives
View of Peers	Not a legitimate source of knowledge	Peers are OK, but instructor is still the Authority	Peers are a legitimate source of knowledge; all opinions are just as good (or bad) as others'	Peers are legit if they follow rules of adequacy
Evaluation	Wrong answers = bad person	Evaluation is main issue; related to amount of time; quantity of work; fairness	Independent thought deserves good grades Or "I'll do what they want"	Evaluation of work separate from evaluation of self; evaluation is part of learning (opportunity for feedback)

Adapted from Cornfield and Knefelkamp (1979) and Belenky et al. (1986; 1997)

Appendix B: Demographic Questionnaire

1. Your Age

1. Your Age

2. Gender

- 2. Gender Female
- Male

3. Predominant Ethnic Background

- African American
- Asian/Pacific Islander
- European American
- Latino/Hispanic
- Middle Eastern
- Native American

Other (please specify)

4. Highest Degree Earned Thus Far

- BA/BS
- BSW
- MA/MS
- M.Ed
- MSW

Other (please specify)

5. What was your undergraduate major?

- Business
- Communications
- Criminal Justice

- [ ] Education
- [ ] Psychology
- [ ] Social Work
- [ ] Sociology
- [ ] Other (please specify)Other (please specify)

6. In which graduate program are you currently enrolled?

- [ ] Community Counseling
- [ ] Counseling Psychology
- [ ] Counselor Education
- [ ] Marriage and Family Counseling
- [ ] Mental Health Counseling
- [ ] Professional Counseling
- [ ] Rehabilitation Counseling
- [ ] School Counseling
- [ ] Social Work
- [ ] Other (please specify)Other (please specify)

7. Current Degree Program:

- [ ] Ph.D/Ed.D/DSW
- [ ] MA/MS/Ed.M
- [ ] MSW

Other (please specify)

8. Year in current degree program (e.g. indicate your 1st year by typing 1)

9. What type of human services experiences have you had where you have provided direct services with individuals, families, or groups? (i.e., employment, practicum, internship, and/or volunteer experience)

	Job Title (start with most recent)	Setting	Service (Years)	Service (Months)	Hours per week	Hours of Weekly Formal Supervision (Individual)	Hours of Weekly Formal Supervision (Group)
1							
2							
3							
4							
5							

Appendix C: The Learning Environment Preferences Instrument

LEARNING ENVIRONMENT PREFERENCES

This survey asks you to describe what you believe to be the most significant issues in your **IDEAL** LEARNING ENVIRONMENT in your graduate training program. Your opinions are important to us as we study how students think about teaching and learning issues. We ask, therefore, that you take this task seriously and give your responses some thought. We appreciate your cooperation in sharing what you find most important in a learning environment.

The survey consists of five sections, each representing a different aspect of learning environments. In each section, you are presented with a list of specific statements about that particular area. Try not to focus on a specific class or classes as you think about these items; focus on their significance in an *ideal* learning environment *for you.*

We ask that you do two things for each section of the instrument:

1. Please **rate** each item of the section (using the 1-4 scale provided below) in terms of its significance or importance to your learning.
2. Review the list and **rank** the three most important items to you as you think about your *ideal learning environment* by writing *the item numbers* on the appropriate spaces at the bottom of the answer sheet.

Please mark your answers on the separate answer sheet provided, and be sure to indicate both your ratings of individual items **and** *your ranking of the top 3 items in each section*. It is very important that you indicate your top three choices for each question area by writing the ITEM NUMBER in the spaces provided (1st choice, 2nd choice, 3rd choice).

Rating Scale:			
1	**2**	**3**	**4**
Not at all significant	**Somewhat significant**	**Moderately significant**	**Very significant**

DOMAIN ONE:
COURSE CONTENT/VIEW OF LEARNING

TO LEARN COUNSELING, MY IDEAL LEARNING ENVIRONMENT WOULD:

1. Emphasize basic facts and definitions.
2. Focus more on having the right answers than on discussing methods or how to solve problems.
3. Insure that I get all the course knowledge from the professor.
4. Provide me with an opportunity to learn methods and solve problems.
5. Allow me a chance to think and reason, applying facts to support my opinions.
6. Emphasize learning simply for the sake of learning or gaining new expertise.
7. Let me decide for myself whether issues discussed in class are right or wrong, based on my own interpretations and ideas.
8. Stress the practical applications of the material.
9. Focus on the socio-psycho, cultural and historical implications and ramifications of the subject matter.
10. Serve primarily as a catalyst for research and learning on my own, integrating the knowledge gained into my thinking.
11. Stress learning and thinking on my own, not being spoonfed learning by the instructor.
12. Provide me with appropriate learning situations for thinking about and seeking personal truths.
13. Emphasize a good positive relationship among the students and between the students and teacher.

PLEASE BE SURE TO REVIEW THE ABOVE LIST AND MARK YOUR THREE MOST SIGNIFICANT ITEMS (BY ITEM NUMBER) IN THE LINES PROVIDED ON THE ANSWER SHEET.

_____

DOMAIN TWO:
ROLE OF INSTRUCTOR

TO LEARN COUNSELING, IN MY IDEAL LEARNING ENVIRONMENT, THE

TEACHER WOULD:

1. Teach me all the facts and information I am supposed to learn.
2. Use up-to-date textbooks and materials and teach from them, not ignore them.
3. Give clear directions and guidance for all course activities and assignments.
4. Have only a minimal role in the class, turning much of the control of course content and class discussions over to the students.
5. Be not just an instructor, but more an explainer, entertainer and friend.
6. Recognize that learning is mutual--individual class members contribute fully to the teaching and learning in the class.
7. Provide a model for conceptualizing living and learning rather than solving problems.
8. Utilize his/her expertise to provide me with a critique of my work.
9. Demonstrate a way to think about the subject matter and then help me explore the issues and come to my own conclusions.
10. Offer extensive comments and reactions about my performance in class(papers, exams, etc.).
11. Challenge students to present their own ideas, argue with positions taken, and demand evidence for their beliefs.
12. Put a lot of effort into the class, making it interesting and worthwhile.
13. Present arguments on course issues based on his/her expertise to stimulate active debate among class members.

PLEASE BE SURE TO REVIEW THE ABOVE LIST AND MARK YOUR THREE MOST SIGNIFICANT ITEMS (BY ITEM NUMBER) IN THE LINES PROVIDED ON THE ANSWER SHEET.

DOMAIN THREE:
ROLE OF STUDENT/PEERS

TO LEARN COUNSELING, IN MY IDEAL LEARNING ENVIRONMENT, AS A STUDENT I WOULD:

1. Study and memorize the subject matter--the teacher is there to teach it.
2. Take good notes on what's presented in class and reproduce that information on the tests.
3. Enjoy having my friends in the class, but other than that classmates don't add much to what I would get from a class.
4. Hope to develop my ability to reason and judge based on standards defined by the subject.
5. Prefer to do independent research allowing me to produce my own ideas and arguments.
6. Expect to be challenged to work hard in the class.
7. Prefer that my classmates be concerned with increasing their awareness of themselves to others in relation to the world.
8. Anticipate that my classmates would contribute significantly to the course learning through their own expertise in the content.
9. Want opportunities to think on my own, making connections between the issues discussed in class and other areas I'm studying.
10. Take some leadership, along with my classmates, in deciding how the class will be run.
11. Participate actively with my peers in class discussions and ask as many questions as necessary to fully understand the topic.
12. Expect to take learning seriously and be personally motivated to learn the subject.
13. Want to learn methods and procedures related to the subject--learn how to learn.

PLEASE BE SURE TO REVIEW THE ABOVE LIST AND MARK YOUR THREE MOST SIGNIFICANT ITEMS (BY ITEM NUMBER) IN THE LINES PROVIDED ON THE ANSWER SHEET.

DOMAIN FOUR:
CLASSROOM ATMOSPHERE/ACTIVITIES

TO LEARN COUNSELING, IN MY IDEAL LEARNING ENVIRONMENT, THE CLASSROOM ATMOSPHERE AND ACTIVITIES WOULD:

1. Be organized and well-structured--there should be clear expectations set (like a structured syllabus that's followed).
2. Consist of lectures(with a chance to ask questions) because I can get all the facts I need to know more efficiently that way.
3. Include specific, detailed instructions for all activities and assignments.
4. Focus on step-by-step procedures so that if you did the procedure correctly each time, your answer would be correct.
5. Provide opportunities for me to pull together connections among various subject areas and then construct an adequate argument.
6. Be only loosely structured, with the students themselves taking most of the responsibility for what structure there is.
7. Include research papers, since they demand that I consult sources and then offer my own interpretation and thinking.
8. Have enough variety in content areas and learning experiences to keep me interested.
9. Be practiced and internalized but be balanced by group experimentation, intuition, comprehension, and imagination.
10. Consist of a seminar format, providing an exchange of ideas so that I can critique my own perspectives on the subject matter.
11. Emphasize discussions of personal answers based on relevant evidence rather than just right and wrong answers.
12. Be an intellectual dialogue and debate among a small group of peers motivated to learn for the sake of learning.
13. Include lots of projects and assignments with practical, everyday applications.

PLEASE BE SURE TO REVIEW THE ABOVE LIST AND MARK YOUR THREE MOST SIGNIFICANT ITEMS (BY ITEM NUMBER) IN THE LINES PROVIDED ON THE ANSWER SHEET.

DOMAIN FIVE: EVALUATION PROCEDURES

TO LEARN COUNSELING, EVALUATION PROCEDURES IN MY IDEAL LEARNING ENVIRONMENT WOULD:

1. Include straightforward, not "tricky," tests, covering only what has been taught and nothing else.
2. Be up to the teacher, since s/he knows the material best.
3. Consist of objective-style tests because they have clear-cut right or wrong answers.
4. Be based on how much students have improved in the class and on how hard they have worked in class.
5. Provide an opportunity for me to judge my own work along with the teacher and learn from the critique at the same time.
6. Not include grades, since there aren't really any objective standards teachers can use to evaluate students' thinking.
7. Include grading by a prearranged point system (homework, participation, tests, etc.), since I think it seems the most fair.
8. Represent a synthesis of internal and external opportunities for judgment and learning enhancing the quality of the class.
9. Consist of thoughtful criticism of my work by someone with appropriate expertise.
10. Emphasize essay exams, papers, etc. rather than objective-style tests so that I can show how much I've learned.
11. Allow students to demonstrate that they can think on their own and make connections not made in class.
12. Include judgments of the quality of my oral and written work as a way to enhance my learning in the class.
13. Emphasize independent thinking by each student, but include some focus on the quality of one's arguments and evidence.

PLEASE BE SURE TO REVIEW THE ABOVE LIST AND MARK YOUR THREE MOST SIGNIFICANT ITEMS (BY ITEM NUMBER) IN THE LINES PROVIDED ON THE ANSWER SHEET.

Appendix D: Online Informed Consent Script

This survey will ask you questions about your opinions of several aspects of your learning preferences. You will not be asked to identify yourself personally, and no information about you other than what you report on the survey will be collected. The answers you provide will be useful in understanding more about cognitive development of graduate students in counseling and social work and will be analyzed for the purpose of developing a cognitive complexity model of supervision. Upon completion of the survey you will be asked to provide your email address if you would like to enter a drawing for an Apple iPod Nano.

If you understand the purposes of the study, you are a graduate student in a social work program and consent to provide your opinions, please click "yes" below. Otherwise, click "no" and you will be taken away from this page.

Yes ☐
No ☐

Appendix E: IRB Letter

USF
UNIVERSITY OF
SOUTH FLORIDA

March 21, 2008

Christopher Simmons, MSW
Department of Psychological & Social Foundations
College of Education
4202 E. Fowler Ave MGY 132
Tampa, FL 33620

RE: **Exempt Certification** for IRB#: 106716
Title: *Correlates and Predictors of Cognitive Complexity Among Counseling and Social Work Students in Graduate Training Programs*

Dear Mr. Simmons:

On 21 March 2008, the Institutional Review Board (IRB) determined that your research **meets USF requirements and Federal Exemption criteria 2 - Educational tests, survey procedures, interview procedures or observation of public behavior.** It is your responsibility to ensure that this research is conducted in a manner reported in your application and consistent with the ethical principles outlined in the Belmont Report and with USF IRB policies and procedures.

Please note that changes to this protocol may disqualify it from exempt status. It is your responsibility to notify the IRB prior to implementing any changes.

The Division of Research Integrity and Compliance will hold your exemption application for a period of five years from the date of this letter or for three years after a Final Progress Report is received. If you wish to continue this protocol beyond those periods, you will need to submit an Exemption Certification Request form at least 30 days before this exempt certification ends. If a Final Progress Report has not been received, the IRB will send you a reminder notice prior to end of the five year period; therefore, it is important that you keep your contact information current with the IRB Office. Should you complete this study prior to the end of the five-year period, you must submit a Final IRB Progress Report for review.

Please reference the above IRB protocol number in all correspondence to the IRB c/o the Division of Research Integrity and Compliance. In addition, we have enclosed an Institutional Review Board (IRB) Quick Reference Guide providing guidelines and resources to assist you in meeting your responsibilities when conducting human subjects research. **Please read this guide carefully.**

OFFICE OF RESEARCH • DIVISION OF RESEARCH INTEGRITY & COMPLIANCE
INSTITUTIONAL REVIEW BOARDS, FWA NO. 00001669
University of South Florida • 12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • Fax (813) 974-5618

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-9343.

Sincerely,

Paul G. Stiles, J.D., Ph.D., Chairperson
USF Institutional Review Board

Enclosures: IRB Quick Reference Guide

Cc: Valentina Lepsky-Perla, USF IRB Professional Staff

SB-EXEMPT-0602

About the Author

Christopher Simmons received a B.S. in Psychology from the University of Louisiana, Lafayette in 1994 and a M.S.W. from Louisiana State University in 1997. He is an instructor and coordinator of the Child Welfare Training Program in the School of Social Work at the University of South Florida. He is also a Licensed Clinical Social Worker and a Qualified Clinical Supervisor. He has provided supervision for Licensed Mental Health Counselor Interns and Licensed Clinical Social Worker Interns; as well as counseling and social work graduate students. His academic interests are cognitive development, clinical supervision, multicultural counseling, and direct practice with children, adolescents, families.