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# Pre-Practicum Students and Cognitive Complexity

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Eighteen students enrolled in a professional orientation and ethics course as part of a counseling training program participated in a study designed to assess the cognitive complexity of first semester master's counseling students. We used the one-minute question and analyzed the results based on Bloom's taxonomy for the cognitive domain. Results suggest a relationship between course content and level of cognitive development. Implications for counselor training and development are discussed.

**Keywords:** CACREP, counseling students, practicum, counseling training, Bloom's taxonomy

One of the basic premises for a counselor education program is the development of a strong counselor identity (Hansen, 2003). Brott & Myers (1999) argued that professional identity serves as the framework through which professional counselors reference their roles and decisions. The Council on Accreditation of Counseling and Related Educational Programs (CACREP) *2009 Standards* highlight the importance of identity development and stress the need for professional counselors to have curricular experiences that set the framework for growth and development of this identity. Humanism serves as the value system through which counselors develop a professional identity that guides their work (Hansen, 2000). Researchers note the importance of cognitive complexity in the identity development of professional counselors (Auxier, Hughes, & Kline, 2003; Brott & Myers; Granello, 2001; Owen & Lindley, 2010; Steward, Boatwright, Sauer, Baden, & Jackson, 1998).

## Cognitive Complexity

Cognitive complexity describes the steps by which individuals move from a simplistic, concrete view of the world to a better understanding of their own values, affirmations, and commitments that influence the totality of their experiences (Perry, 1970). Based on Perry's (1970) research, Erwin (1983) identified four levels of cognitive development for counselors: dualism, relativism, commitment, and empathy. According to Erwin (1983), counselors move from seeking authority to help define issues in clear-cut, dichotomous terms to understanding the importance of life decisions in

terms of their impact on other people. The counseling literature supports the importance of cognitive complexity in counselor development (Birk & Mahalik, 1996; Granello, 2000, 2010; Hansen, 2010; Lovell, 1999; Owen & Lindley, 2010; Welfare & Borders, 2010).

Birk and Mahalik (1996) noted that counselors-in-training who displayed higher levels of cognitive complexity focused on their effectiveness and appeared less anxious than those who displayed lower levels of cognitive complexity. Spengler and Strohmer (1994) studied 119 doctoral level counseling psychologists and found that individual differences in cognitive complexity moderated the cognitive processes that create bias in the students' clinical judgment. Borders (1989), Granello (2001), and Welfare and Borders (2010) concluded that higher levels of cognitive complexity related to clinicians' ability to provide a more detailed and comprehensive clinical assessment of client characteristics. The challenge for counselor educators is to enhance the cognitive development of counselors-in-training by providing learning opportunities designed to challenge critical thinking skills. One such approach is the use of Bloom's Taxonomy (Bloom, Engelhart, Furst, Hill, & Krathwol, 1956) in developing a curriculum to enhance identity development and to increase cognitive complexity.

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## Bloom's Taxonomy

Bloom's Taxonomy (Bloom et. al., 1956) is a classification system designed to provide a concrete understanding of cognitive operations by classifying cognitive functions from least to most complex. According to Bloom, each level of cognitive function builds on the previous one as individuals become more complex in their thinking. Granello (2001) stated that researchers use the model to assess curricular development and educational research and suggested it is the most widely accepted model for understanding cognitive abilities. There are six levels of complexity theorized by Bloom and his colleagues: knowledge, comprehension, application, analysis, synthesis, and evaluation.

### Knowledge

Knowledge is considered to be the lowest level, and it is here that students recall facts and recognize relevant information. Memory serves an important role at this level, and students do not necessarily show an understanding of what they have read. Their concern focuses on making sure the facts are accurate. For example, students at this level can state a quote related to the literature in counseling but cannot expand on what the quote means contextually.

### Comprehension

At the comprehension level, students understand the meaning and interpretation of instructions and problems. Unlike students at the knowledge level who simply recite facts, students at this level can summarize the important points and rewrite the information in their own words. For example, students at this stage can explain their approach, in their own words, to an initial session with a client.

### Application

Students at the application stage of cognitive development begin to apply concepts learned in the classroom to novel situations in work and in society. They pull multiple resources together to make cohesive and comprehensive arguments about a topic. They still rely on the analysis of others to gain understanding of their own work but cannot analyze situations and research materials. For example, an analysis of a review of the literature is difficult to conduct.

### Analysis

When students reach the analysis stage, they no longer rely on the analysis of others to provide understanding of the material. They identify component parts, patterns, and principles. They reach conclusions of their own; however, they cannot provide a method for evaluating information. For example, a student at this level would struggle with trying to take a contradictory stance to information presented to him or her from a client or supervisor.

### Synthesis

When students begin to synthesize information, they organize, integrate, and combine ideas into a new plan or approach. The students build a structured pattern from a number of different resources by combining component parts into broader themes and principles. For example, a student at this stage can write an informed consent statement for clients at his or her internship site. What he or she cannot do is give merit to those principles and ideas that are in conflict with what he or she has conceptualized to be factual.

### Evaluation

Evaluation represents the highest stage of cognitive development in Bloom's taxonomy, and it is here that students are able to make judgments about the values and ideas of a particular concept or situation. Criteria developed by the student or by conceptual information the student has read provides a basis for judgments. For example, a student at the evaluation level can make an assessment about which clinical approach would be most effective for a particular client. Most importantly, they accept the notion that the field does not provide clear answers to problems by considering contradictory information in their evaluation approach.

## Current Study

In the current study, we assessed the level of cognitive complexity for beginning counseling students using Kloss' (1994) one-minute question:

1. What was the most important thing you learned today?
2. What one question are you left with after today's class?

Research supports the importance of cognitive complexity for professional counselors (Etringer, Hillerbrand, & Claiborn, 1995; Sawatzky, Jevne, & Clark, 1994; Skovholt & Ronnestad, 1992), and the developmental nature of cognitive complexity has been recognized in the literature (Corey, 2001). However, little research exists that addresses the cognitive development of counselors while they are still in training.

Nassar-McMillan and Niles (2011) highlight the important role counselor educators have in helping counselors-in-training develop the complexity in thinking necessary to navigate through their clients' core issues. Guidon (2011) postulates that counselor educators miss valuable opportunities to develop and strengthen trainees when they do not incorporate multiple methods for helping them understand the role cognitive complexity plays in their development. The purpose of this study was to examine the cognitive level of comments and questions that participants asked at the conclusion of each professional orientation and ethics class for beginning mental health and school counseling master's students. At the end of each class period for ten weeks, each participant recorded a comment and a question about what

they learned. The research group coded each question for weeks 1, 5, and 10 according to Bloom's Taxonomy for the Cognitive Domain (Bloom, 1956).

## Method

Qualitative analysis of the data was concrete and participant-focused (Weiss, 1994). The data analyzed were concrete or focused on participant behavior, in this case participant answers to questions provided at the end of each class period. The data were participant-focused since the data were related to the individual responses rather than responses to be generalized to other populations. We triangulated the analysis using five research group members who analyzed data independently based upon an initial coding scheme and then met to negotiate the final coding (Patton, 1991).

### Participants

The 18 participants were mental health (8) and school counseling students (10) enrolled in their first semester of masters in counseling programs at a research institution in the Southeastern part of the United States. Participants included those enrolled in the introductory professional orientation and ethics class during their first semester in the masters counseling program. Sixteen participants were female, two were male. Seventeen participants were Caucasian/non Hispanic and one participant was Asian. The age range was 21 to 46 years, with an average age of 26.06 ( $SD = 6.47$ ). The range of the professional counseling experience was 0 to 5 years, with an average of 1.31 years of experience ( $SD = 1.64$ ). The years of non-counseling experience ranged from 0 to 25 years, with an average 7.39 years of experience ( $SD = 7.11$ ). Half of the participants completed the basic counseling skills class prior to taking the orientation and ethics class; the remaining half enrolled the basic skills class concurrently with the orientation and ethics class.

### Procedure

We invited all students enrolled in professional orientation and ethics course to participate in the study the first day of class. Those who chose to participate signed an informed consent; all students returned the informed consent forms. At the conclusion of 10 class periods during the semester (weeks two through 11), the instructor left the classroom and a member of the research group asked the students to answer the following questions using index cards:

1. What was the most important thing you learned today?
2. What one question are you left with after today's class? (Kloss, 1994)

All students in the course provided written responses and recorded their participant number. The instructor, a member of the research team, did not see the responses until the following semester. We linked all responses to the participant identifier.

The professional orientation course provides counselors-in-training with information about professional practice issues in school counseling, mental health counseling, rehabilitation counseling, and related human service fields. The course serves as an introduction and overview of the counseling profession, and counselors-in-training learn about the roles and responsibilities of professional counselors. Counselor identity, discussed in detail, includes information about professional organizations, professional journals, preparation standards, credentialing, licensure, professional advocacy, current trends, and ethical and legal issues. All newly admitted students take this course their first semester in the program. The professional orientation course is a prerequisite for the practicum course which serves as the initial clinical application of the skills previously acquired. During the final five weeks of the course, the students are divided according to degree specialty (Mental Health or School) to have an opportunity to learn more specific information about their selected career path.

During week one, the professor chose the topic "Counseling as a Profession" and lectured to the students about the development of the counseling profession and its implications for their work as professional counselors. Students participated in a small group exercise in which they were divided into groups of four and presented case scenarios related to professional issues. The students processed these scenarios in their own small groups and then were given the opportunity to discuss their findings with the entire class.

The professor focused on professional issues within the counseling profession during week five of the course. More specifically, the professor talked about confidentiality, privileged communication, subpoenas, and technology as it relates to the counseling profession. Students listened to a presentation on the subjects listed above. Before class, the students read an article to help illustrate the concepts presented. This article focused on the shootings at Virginia Tech in April, 2007, and the ethical and legal challenges the school faces as a result of the tragedy (Flynn & Heitzmann, 2008). Students engaged in spirited discussions about the ethical and legal implications of this tragedy as well as the implications for them as future professionals. Also, students discussed a case study designed to challenge their values, and they had the opportunity to express their concerns and process their beliefs related to the Virginia Tech scenario.

During week 10, students analyzed specific ethical and legal issues in counseling families, groups, children, and vulnerable clients. The instructor presented a lecture on each topic and then asked students to provide feedback related to the lecture. Students divided into groups of four to five people and developed and presented a role-play of an ethical situation a group counselor or family counselor may experience. The students who observed the role play provided feedback about the implications presented in the role play. The class concluded with the students completing their final preparations for poster session presentations scheduled to take place during the next class.

## Data Analysis

As stated earlier, we used Bloom's Taxonomy for the Cognitive Domain (Bloom, 1956) as a measure of first semester counseling students' cognitive development. Bloom categorized cognitive processes into six categories reflecting a range from the more basic gain of knowledge to the more complex process of evaluation. Each of these categories represents behavior that can be assessed and measured. A revision to Bloom's taxonomy translated the categories from nouns to verbs fostering clearer understanding of each category and assisting in coding of data (Anderson & Krathwohl, 2001). The revision also included listing the evaluate/evaluating category after the analyzing category and placing the synthesis/creating as the most complex cognitive process. We based our coding on Bloom's original order of cognitive development by placing the synthesis category before the evaluate category.

We used the verbs most associated with each of Bloom's levels of cognitive development (Anderson & Krathwohl, 2001) to code the participants' responses. Table 1 outlines the codes and includes a column on the far right. This column details the additional information related to several of the categories we developed that emerged during the research group's analysis.

We selected three weeks, (the first, the fifth, and the tenth) for analysis and evaluation to capture changes throughout the semester and to consider the role course delivery method played in cognitive complexity development. Members of the research group coded each comment and question for week one according to the six categories of Bloom's cognitive development. The research team then met to negotiate the coding for each individual. Each member of the research team was required to individually code the responses and then bring their results to a meeting to analyze the data. During this meeting, we based our discussion of individual coding on the understandings of Bloom's taxonomy as represented in Tables 2 and 3. As a group, we negotiated a consensus for each coding. We held five additional meetings to code weeks 5 and 10 following the same process of independent coding and negotiated understandings of comments and questions used for the first week.

When differences in coding arose, we processed these differences until we developed an agreement on the coding. We reviewed Bloom's taxonomy and participated in a discussion about the statement and which aspects of the taxonomy to which it was most related. Researchers were allowed to discuss the salient aspects of the statement and how the statement connected with Bloom's taxonomy.

## Findings

During week one students responded to Question 1, "What was the most important thing you learned today?" with fourteen responses at the knowledge level and three at the comprehension level. Primarily these focused on ethical and licensing issues reflecting the topics addressed in class. Examples of ethical issues were awareness of issues, codes of

ethics, self-care, ambiguities, and dual relationships. Students learned about the nature of licensing, how difficult it is to move from state to state, and licensure as it pertains to work after graduation.

During week one students presented varied responses to Question 2: "What one question are you left with after today's class?" Seven knowledge and two comprehension questions focused on class nuts and bolts (e.g., "I wonder if there is enough time for us to complete all outside work; I still have questions about clarification of our field work assignments.") and ethical practice (e.g., "How does the ACA answer questions regarding ethical dilemmas?"). Two application questions and two analysis questions related to ethical practice (e.g., "How am I going to deal with certain ethical dilemmas?" and "What happens to you if you go against an ethical code? Lose your job? License?"), advocacy (e.g., "What are some of the better ways to go about advocating for the profession? What really works?"), and consultation (e.g., "How is consultation with clients different from counseling?").

Based upon Bloom's taxonomy, the student's indicated two knowledge questions, seven comprehension questions, five application questions, and one question each for analysis, synthesis, and evaluation. Student responses included "There are many shades of grey in the ACA code of ethics" (comprehension), "How to apply ethical codes to a specific case" (application), "How to look at the perspectives of an ethical dilemma and how its [sic] important to clarify between ethical and professional and legal violations" (analysis), "How to identify ethical problems, which codes correspond, and develop steps to take regarding [them]" (synthesis), and "Applying ethical codes to the case study differentiate ethical, profession, legal problems" (evaluation).

The questions that remained for students after week five were primarily higher level questions. Six application, two analysis, and three synthesis questions reflected going beyond the class discussion. Students wanted to see different applications of codes pertaining to alternative populations, to understand differences in state laws and legal aspects of counseling, consulting during a suicide assessment, and the link between ethical behavior and laws. Three knowledge questions and two comprehension questions focused on the mid-term exam and state laws and insurance required.

For week 10, what students learned depended upon their classroom experiences in the specialty areas. School counseling students reported questions that spanned the taxonomy. One of the nine students had no questions, two students asked knowledge questions (e.g. "How did I score on those tests? [taken in class]"), three focused on application (e.g. "I want to learn more about how we work with students with disability and their parents"), one asked an analysis question (e.g. "How this applies to the political environment within the school toward school counselors 'hidden expectations'"), and one a synthesis question ("What is the school counselors [sic] role in dealing with a learning disabled child and how much do they collaborate with the school psychologist?").

**Table 1. Bloom’s categories of cognitive development with sample responses from participants.**

| Bloom’s Cognitive Category*     | Description**  | Key Words***   | Sample responses   |
|---------------------------------|--|--|--|
| knowledge/<br>remembering       | Retrieving, recognizing, and recalling relevant knowledge from long-term memory  | defines, describes, identifies, knows, labels, lists, matches, names, outlines, recalls, recognizes, reproduces, selects, states.  | <ol style="list-style-type: none"> <li>1. Most important thing I learned.</li> <li>2. About information.</li> <li>3. Ask about what instructor said and what instructor taught.</li> <li>4. Ask for a list or definition.</li> <li>5. Ask about structure of class or an assignment.</li> </ol>  |
| comprehension/<br>understanding | Constructing meaning from oral, written, and graphic messages through interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining.                      | comprehends, converts, defends, distinguishes, estimates, explains, extends, generalizes, gives Examples, infers, interprets, paraphrases, predicts, rewrites, summarizes, translates.                               | <ol style="list-style-type: none"> <li>1. Go beyond initial knowledge.</li> <li>2. Try to link two concepts.</li> <li>3. Want more in-depth information about a concept.</li> <li>4. Distinguish between two concepts.</li> <li>5. Explain differences.</li> </ol>   |
| application/<br>applying        | Carrying out or using a procedure through executing, or implementing.  | applies, changes, computes, constructs, demonstrates, discovers, manipulates, modifies, operates, predicts, prepares, produces, relates, shows, solves, uses.  | <ol style="list-style-type: none"> <li>1. Questions about how to link information to practical situation.</li> <li>2. Want to know how to deal with certain situations.</li> <li>3. Ask “What am I going to do?”</li> <li>4. Ask “What is my role?”</li> <li>5. State, “if..., can you develop a list of instructions... for us to go by?”</li> <li>6. Want to learn how we work...</li> </ol> |
| analysis/<br>analyzing          | Breaking material into constituent parts, determining how the parts relate to one another and to an overall structure or purpose through differentiating, organizing, and attributing. | analyzes, breaks down, compares, contrasts, diagram, deconstructs, differentiates, discriminates, distinguishes, identifies, illustrates, infers, outlines, relates, selects, separates.                             | <ol style="list-style-type: none"> <li>1. Explain a process.</li> </ol>  |
| synthesis/<br>creating          | Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure through generating, planning, or producing.                    | categorizes, combines, compiles, composes, creates, devises, designs, explains, generates, modifies, organizes, plans, rearranges, reconstructs, relates, reorganizes, revises, rewrites, summarizes, tells, writes. | <ol style="list-style-type: none"> <li>1. Ask “What would happen if.....?”</li> <li>2. Creating something new – not just what the instructor said.</li> </ol>  |

**Table 1. Bloom's categories of cognitive development with sample responses from participants. (continued)**

| Bloom's Cognitive Category* | Description**   | Key Words***  | Sample responses |
|-----------------------------|---|---|------------------|
| evaluation/evaluating       | Making judgments based on criteria and standards through checking and critiquing. | appraises, compares, concludes, contrasts, criticizes, critiques, defends, describes, discriminates, evaluates, explains, interprets, justifies, relates, summarizes, supports. |                  |

Note: \*(Anderson et. al., 2001)  
 \*\*(Anderson et. al. 2001, p. 67-68)\n  
 \*\*\*(Ward, 2009)

For the eight mental health counseling students, one had no questions, one had a knowledge question (“What kind of documentation do these insurance companies need to justify sessions?”), three had application questions (e.g. “I would like to know more about the DSM, because I want to work with substance abuse clients who will likely have a mental illness”), and one wrote a synthesis question (e.g. “Does your location effect your placement on insurance lists? Could I be low in [state], then move to [different state] and

be higher and get more clients?”). In addition to the coded cognitive responses to the one minute question, we noted ten comments and questions that reflected an emotional response not captured in Bloom's Taxonomy of Cognitive development. One such response relates not only to the cognitive learning but to the emotions that the content generated (“I learned how difficult it can be . . . or how inferior you can feel having a disability.”).

**Table 2. Sample responses to Question 1 delineated according to Bloom's taxonomy.**

| Bloom's Cognitive Category* | Sample Response   |
|-----------------------------|---|
| Knowledge                   | I learned about licensure and working after graduation.<br>I learned some of the appropriate steps to take with a suicide client--still have much to learn.<br>I learned the difference between a 504 plan and an IEP.  |
| Comprehension               | I should be aware, awareness of everything is the most important aspect of this profession.<br>I learned that it can be difficult to discern differences between ethical and professional dilemmas.<br>Managed care has a greater impact than I realized on mental health services. |
| Application                 | The most important thing I learned today was how to handle a client that is at risk for suicide and the steps to take.<br>I learned how to apply ethical codes to different hypothetical situations.<br>How to operate within the managed care system.                              |
| Analysis                    | I learned how to look at the perspectives of an ethical dilemma and how it's important to clarify between ethical and professional legal violations.  |
| Synthesis                   | How to id ethical problems, which codes correspond, and develop steps to take.  |
| Evaluation                  | Applying ethical codes to the case study differentiate ethical, professional, legal problems.   |

\*Note: Anderson et. al. (2001)

**Table 3. Sample responses to Question 2 delineated according to Bloom's taxonomy.**

| Bloom's Cognitive Category* | Sample Response  |
|-----------------------------|--|
| Knowledge                   | How can you remember everything in the handbook?<br>What's on the midterm?<br>What kind of documentation do these insurance companies need to justify sessions?  |
| Comprehension               | Want to know the best way to assimilate ethics into professional practice.<br>I wonder if many issues can be both ethical and professional.<br>I want to know more about theories.   |
| Application                 | How am I going to deal with certain ethical dilemmas?<br>With a suicide assessment and seeking supervisory consultation, how do you get the supervisor in the room?<br>What is the counselor's role in IEP and s-team meetings?  |
| Analysis                    | What are some of the better ways to go about advocating for the profession? (What really works?)<br>Do agency policies always line up with other law?<br>How this applies to the political environment within the school toward school counselors "hidden expectations".             |
| Synthesis                   | Would like to integrate theories and ethics further.<br>I wonder what to do if you don't have time to consult in a crisis situation.<br>What is the school counselor's role in dealing with a learning disabled child and how much do they collaborate with the school psychologist? |
| Evaluation                  | No responses codified at this level.   |

Note: \*Anderson et. al. (2001)

## Discussion

This study was designed to assess the cognitive complexity of first semester counseling students. An interesting finding in the study was that current events may be tied to course content to promote cognitive complexity development. The students displayed the highest level of cognitive complexity in week five during which the instructor used Flynn & Heitzmann's (2008) article about the shootings at Virginia Tech University to highlight the relevance of ethical and legal behavior and its implications for professional counseling. The results of the study highlight the role counselor educators play in helping to develop a knowledge base from which counselors-in-training can further develop their cognitive skills. Counselor educators need to serve as conduits through which counselors-in-training can develop a strong knowledge base. The acquisition and assimilation of this knowledge base can increase cognitive complexity in counselors-in-training as they are exposed to new material.

Granello, Hothersall, and Osborne (2000) demonstrate the use of the academic genogram to help increase critical thinking skills for career decision making among doctoral counseling students, and Cheston (2000) advocates the use

of case studies as a way to help counselors-in-training develop higher levels of thinking about the clients they will serve. Such exercises provide an opportunity for counselors-in-training to begin the process of applying what they have read to situations they may face in the field which can be an effective method for increasing the cognitive development of counselors-in-training (Nelson & Jackson, 2003). The counselor educator plays a pivotal role in the delivery of course content and its effect on counselors-in-training. The variety in which counselor educators deliver this information supports stronger assimilation and thereby fosters higher levels of cognitive complexity as defined by Bloom's Taxonomy.

Counselor educators need to consider multiple strategies for encouraging critical thinking skills among counselors-in-training. Etringer et. al. (1995) validate the importance of diverse academic experiences during training to help counselors move from novice to expert during their careers as professionals. They encourage counselor educators to consider strategies that require memory and knowledge structuring, pattern recognition and reasoning, and problem solving opportunities to increase cognitive complexity development in counselors-in-training. Similarly, Auxier et. al. (2003) conclude that professional identity for counselors develops within a framework that is supported by learning strategies, and designed to develop attitudes about responsibility and ethics



which helps to support higher levels of cognitive functioning. It is important for counselor educators to be intentional about the types of assignments they select because these assignments can serve as the impetus for further cognitive development in counselors-in-training.

### Implications

The results have implications for counselor educators who are charged with the task of increasing cognitive complexity in the students with whom they interact. Knowledge helps counselors-in-training move to higher levels of cognitive complexity. Granello and Hazler (1998) advocate a developmental approach in helping counselors-in-training develop cognitive complexity which helps them develop into counselors who are more empathetic, autonomous, and flexible in their counseling methods. For example, Granello (2001) explains how an assignment such as a literature review, which is designed to collect and effectively organize knowledge about a particular area of interest, can be used to facilitate cognitive complexity development in counselors-in-training. Welfare and Borders (2010) developed an instrument, the Counselor Cognitions Questionnaire, designed to quantify cognitive complexity for counselors-in-training. Counselor educators need to continue to stress the importance of knowledge attainment and find more effective strategies to use these types of approaches to help develop advanced thinking skills in counselors-in-training.

Granello (2010) provides evidence that counselors-in-training become more cognitively complex as they move through their graduate training programs. McAuliffe and Lovell (2006) conclude that the trainee's complexity influences acquisition of the skills necessary to facilitate empathy and to develop a therapeutic relationship with clients. Counselor educators have a unique opportunity to affect change and growth in their trainees as the trainees grow and develop their professional identities.

Counselor educators need to understand that it is important for counselors-in-training to developing a strong knowledge base in order to help them develop stronger cognitive skills. The participants in this study demonstrated knowledge about the subject material before they were able to demonstrate advanced cognitive complexity. Auxier et. al. (2003) highlight the importance of traditional academic learning experiences as precursors to identity development and cognitive complexity in counselors. According to their research, students value these experiences, but the level of importance students place on these experiences increases as they develop complex thinking skills. Granello (2001) concluded that beginning counselors-in-training focus more on attaining factual information and that this search is a necessary part of the development of cognitive complexity. It is important for counselor educators to continue to provide academic learning experiences as they can serve as building blocks for cognitive complexity development.

### Limitations

In interpreting the findings of this study, there are several factors that must be considered. First, these students in this study were enrolled in a counselor training program and the study was conducted during class time. Also, this was their first experience in a graduate training program, so one needs to consider their view of the importance of the study even though appropriate procedures were in place to protect confidentiality and to promote informed consent. Social desirability and expectation effects may have influenced the students' responses to the one-minute question at the end of class.

Second, there is no way to account for life experiences as well as programmatic experiences that occurred when the students were not in class. All of the students do not take the same classes; therefore, differences in teaching strategies experienced in other classes could have influenced cognitive complexity development in a profound way. Also, some students came straight from work to the class while others did not. These experiences could have enhanced or hindered cognitive complexity development for the participants and should be taken into consideration when interpreting the results.

Third, the generalizability of the findings is subject to scrutiny. The participants represented a cross-sectional sample of the program in which they were enrolled; however, this is one counselor education program in the southern region of the United States. It is conceivable that regional differences could have a profound influence on cognitive complexity development for counselors-in-training given the variety of community experiences they encounter during their academic training. Levels of cognitive complexity development can be influenced by values and cultural differences which can differ based on geographical region (Stewart et. al., 1998).

### Conclusion

This research was designed to provide further information about the development of cognitive complexity in counselors-in-training. The findings highlight the relevance of the developmental nature of cognitive complexity and the need for counselor educators to consider all aspects of cognitive development as they work with counselors-in-training. Also, it supports the notion that there are a variety of approaches that facilitate cognitive complexity development in counselors-in-training, and counselor educators need to understand the process of complexity development for optimal use of these approaches in their courses. Future studies should focus on cognitive complexity development at different points in training (e.g., before and after internship). Finally, researchers should employ longitudinal analysis techniques to provide further understanding of the developmental nature of cognitive complexity for counselors-in-training.

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