LOYOLA UNIVERSITY CHICAGO

TEACHING EDUCATIONAL PSYCHOLOGY: COMPARISONS ACROSS STUDENT, INSTRUCTOR, INSTITUTION, AND COURSE VARIABLES

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TABLE OF CONTENTS

LIST OF TABLES

ABSTRACT

This dissertation research study was designed to investigate the teaching of educational psychology in teacher education programs of study. Student, instructor, and institution/course characteristic categories were targeted. The research questions were crafted to determine if there were significant differences, interactions, and/or inter-relationships for any of the outcome measures on the basis of the variables included in these categories. The outcome measures included student performance on a measure of student educational psychology knowledge, course grades, performance on a sequencing instruction exercise, and students' self-reported tendency to use diverse assessments.

Four institutions, 20 instructors, and 721 students participated in this study. A pre-post cross-sectional correlational design was used. In addition, a content analysis of course materials and a series of interviews of students and instructors were used. Significant differences were found in three of the four outcomes for some of the characteristics. There were no significant interaction effects found. When the characteristics were loaded into the regression models, some characteristics were found to be significant predictors. For educational psychology knowledge, course type and instructor's degree were found to be significant predictors. For the tendency to use diverse assessment, the instructor's degree was a significant predictor. For student grades, the instructor's K-12 experience and teaching method remained as significant

predictors. It should be noted that some results should be interpreted with caution due to small cell sizes for some of the characteristics and outcome measures.

Overall, the results of this study provide support for the expansion of the role of educational psychology within teacher education programs of study. It would appear that educational psychology is best taught by an instructor with some advanced training in the discipline. Moreover, students should be taking educational psychology relatively late in their programs of study. Finally, the educational psychology requirement in a teacher education program of study seems to yield better outcomes if taught as a two-semester sequence. Nevertheless, more research is needed to document the effects of this expanded role in terms of student outcomes. An experimental design and a more diverse sample, needs to be included before this mode of delivery becomes the "best practice" standard.

CHAPTER I

INTRODUCTION

The role of educational psychology in teacher preparation programs has recently been called into question (Anderson, Blumenfeld, Pintrich, Clark, Marx, & Peterson, 1995; Shuell, 1996). Educational psychology is a discipline deeply rooted in the scientific empirical tradition (Shulman, 1990). In fact, one of the original purposes for the inclusion of educational psychology in teacher preparation programs was to provide a scientific or intellectual foundation for the practice of teaching (Anderson et al., 1995; Berliner & Calfee, 1996; Doyle & Carter, 1996; Shuell, 1996). As paradigms have shifted, concerns have risen regarding the relationship between theory and practice. Authors have called for educational psychology to be more relevant, integrated, and prescriptive (Anderson et al., 1995; Shuell, 1996). Researchers have discussed the variety of contexts in which educational psychology is currently taught (Rocklin, 1996; Shuell, 1996) and called for more integrated and practically oriented courses (Anderson et al., 1995; Doyle & Carter, 1996; Eisner, 1997; Rocklin, 1996; Shuell, 1996).

In 1995, the Educational Psychology Division of the American Psychological Association's Ad Hoc Committee on the Teaching of Educational Psychology called for research and development about teaching educational psychology (Anderson et al.). Although the Ad Hoc Committee and others (Anderson et al., 1995; Shuell, 1996) have described a variety of contexts in which educational psychology is taught, there is no

body of research designed to investigate the outcomes of such variety (Renninger, 1996). Many authors have asserted that educators know little about the effects of using case studies as a method in educational psychology courses (Anderson et al.; Block, 1996; Shuell, 1996). How textbooks are used in educational psychology courses has been investigated to some degree (Anderson et al., 1995; Hoy, 1996; Marshall, 1996; Rocklin, 1996). Anderson et al. (1995) also questioned whether the inclusion of reflective practices might enhance the transfer of learning. In addition, questions have been raised about the almost impossible amount of information to be addressed in a one-semester educational psychology course and how well the course is integrated into an overall program of studies (Anderson et al., 1995; Hoy, 1996; Shuell, 1996). Sternberg (1996) recommended that educational psychologists investigate the teaching-learning process, the study of expert teaching, and the expert learner in the hope that researchers and practitioners will work more closely together, thus improving the reputation and influence of educational psychology. Finally, the call of the Anderson et al. group is echoed by a growing call in the literature for a new type of scholarship in elementary and secondary schools, and in institutions of higher education, also called the "insider research" and/or the "teacher as researcher" movements (Anderson & Herr, 1999).

Purpose

In response to this call, a research team was formed between two universities in the Chicago area (Johnson, Saxon, Shnay, & Ketcher, 1998; Morgan, Olson, Coco, Johnson, & Saxon, 1998). This team includes full-time faculty, part-time faculty, and graduate student instructors assigned to teach multiple sections of undergraduate and graduate

level educational psychology courses. Multiple individual studies are contributing to the knowledge base in various ways for this ongoing teaching educational psychology research project. The goals of this project are to improve the teaching of educational psychology and examine the role of educational psychology in teacher education.

The overall purpose of this part of that larger study was to investigate the teaching of educational psychology in teacher preparation programs along some of the dimensions noted by Rocklin (1996). These dimensions include student characteristics, instructor characteristics, and institutional/course characteristics. For the present study, the variables targeted for investigation included: student characteristics (age, gender, ethnicity, student status, major, and prior educational psychology knowledge); instructor characteristics (experience teaching at college level, experience teaching at K-12 level, educational level); and institution/course characteristics (placement of educational psychology in the program, one- or two-semester sequence, use of case studies, class size, clinical/field experience, number of reflective activities required, types of instructional practices/methods used, and topics, theories, and research presented).

Significance of the Study

In their report as the Ad Hoc Committee, Anderson et al. (1995) called for educational psychologists to make a case for the field of study and its place in teacher education, the support for which must come through "legitimizing research in the teaching and learning of educational psychology, and by valuing such research and exemplary teaching in evaluations of educational psychology professors" (p. 155). One year later, Anderson reiterated this directive specifically in reference to the many

arguments/questions regarding the content and place of educational psychology in teacher education, suggesting discussion be "informed by more systematic research about what is learned in educational psychology courses" (Blumenthal & Anderson, 1996, p. 3). According to Rocklin (1996), "No census of educational psychology instructors exists" (p. 38).

Research designed to investigate differences in outcomes based upon a number of the characteristics along which educational psychology courses vary can add to our theoretical knowledge in terms of the role of educational psychology in teacher education and learning theory. In addition, the knowledge can be used in a more practical way to enhance content, pedagogy, and faculty development. This knowledge has potential to increase the legitimacy of the discipline within teacher education programs of study and effectively improve the educational practices used to teach educational psychology.

Research Questions

As noted above, the overall purpose this study was to investigate the teaching of educational psychology in teacher preparation programs of study. Derived from the dimensions noted by Rocklin (1996), characteristics of students, instructors, and institutions/courses were compared in relationship to a number of outcome measures. The following research questions were addressed:

I. Are there significant differences in the outcome measures across student characteristic categories?

II. Are there significant differences in the outcome measures across instructor characteristic categories?

III. Are there significant differences in the outcome measures across institution/course characteristic categories?

IV. Are there significant interactions among student, instructor, institution/course characteristic categories and the outcome measures?

V. Are there significant relationships among student, instructor, institution/course characteristic categories and the outcome measures?

CHAPTER II

REVIEW OF LITERATURE

This review of available literature begins with a short history of educational psychology, including a description of its British and European roots, American behaviorism, and the effects related to the cognitive revolution. The role of educational psychology in teacher education and the applicability of its traditional foundations metaphor are critically examined. As noted in chapter one, many calls have been made to examine educational psychology, both from within and outside of the discipline. In light of these many requests to critically examine the field, this dissertation research project was crafted.

A Short History of Educational Psychology

Educational psychology began to emerge and gain identity as a separate discipline sometime between 1800 and 1850 (Walberg & Haertel, 1992). This emergence and identification was capped in 1892 when William James presented lectures on psychology applied to education, which he then published as "Talks to Teachers" (as cited by Hilgard, 1996b; Mayer, 1992). There are a number of developments prior to this era that caused or contributed to the development of educational psychology as a field. Major sources of these can be found in the history of British and European philosophy and psychology.

European and British Roots

Boring made reference to a number of major philosophers and theorists who contributed to the methods and content of modern educational psychology (Glover & Ronning, 1987). Aristotelian philosophy was merged with empiricism and the writings of John Locke (Hilgard, 1996b; Wigle & Sylvester, 1996). British empiricism flourished due in large part to the writings and teachings of two major philosophers: George Berkely and David Hume. Berkely is well known for developing the idea of subjective realism and a resultant theory of meaning. David Hume coined the term "associationism" and began to explore correlations and the cause/effect reasoning still used in the field today (Hilgard, 1996b). These efforts have been associated with the beginning of behaviorism. According to Walberg and Haertel (1992):

> Associationism and British empiricism taught that the activities of organisms are random but that certain activities result in pleasurable effects and remain in the organism's repertoire. The Russian psychologists I. M. Sechenov, Ivan Pavlov, and Vladimir M. Bechtenev confirmed that selected reflexes could be conditioned. They provided mechanistic models for understanding covert processes in animals, as well as their overt behaviors. (p. 6)

In the 19th century, James Mill identified topics such as consciousness, conception, imagination, classification, abstraction, memory, and belief (Walberg & Haertel, 1992). His son, John Stuart Mill, began to use "mental chemistry" as a term coming from experimentation and not just deduction. In addition, "his concern for observation led us to the methods that are used in modern experimental psychology" (Klein, 1970, as cited in Walberg & Haertel, p. 3).

At the same time, German philosopher Immanuel Kant was developing the idea of rationalism. His belief that "a priori categories exist in the mind, the purpose of which is to organize and interpret sensory data," was one of the cornerstones for both Jean Piaget's theory of cognitive development and Lawrence Kohlberg's theory of moral development and reasoning (Walberg & Haertel, 1992, p. 3).

In 1879, William Wundt was developing the first "psychological laboratory" in Leipzig, Germany (Walberg & Haertel, 1992). This worldwide forum for scholars, with a wealth of experimentation and introspection, was reputed to have enormous influence on visiting American psychological scholars such as G. Stanley Hall, James Catell, and Charles Judd. In terms of influencing American and European psychologists and educators, four other names appear frequently in the late 18th and early 19th centuries: Rousseau; Pestalozzi; Herbart; and Froebel (Hilgard, 1996a, 1996b). Last but not least, Francis Galton's 1869 book "Hereditary Genius," which suggested that intelligence has a hereditary component, moved the nature/nurture debate to the forefront, engendering the theme of individual differences pervasive to this day in educational and psychological literature (as cited by Walberg & Haertel). This tome had direct impact upon James Catell and Edward Thorndike, two American theorists who were prominent in the development of educational psychology in the United States.

American Educational Psychology

According to Glover and Ronning (1987), "At the turn of the century, American psychologists were coalescing in to [sic] a discipline-based group" (p. 4). Around 1863, psychology began to appear in the curriculum of "normal" (teacher training) schools

(Walberg & Haertel, 1992). William T. Harris wrote one of the first educational psychology textbooks (Hilgard, 1996b). He made an effort to incorporate the work of Herbart and Pestalozzi and was probably most well known for promoting the adoption of the "graded school" concept. The largest training schools at the turn of the century included the University of Chicago, Teachers College at Columbia University, Clark University, Harvard, and the University of Michigan (Walberg & Haertel). Colonel Frances W. Parker, after revolutionizing schools in Massachusetts, founded the teacher training institute at the University of Chicago which still bears his name: The Frances W. Parker School. Many of the faculty at these institutions were a part of the prominent group becoming known as educational psychologists and having roles in the shaping of that discipline in America. This group included William James, G. Stanley Hall, James Cattell, Charles Judd, John Dewey, J. R. Angell, and E. L. Thorndike (Hilgard, 1996b; Walberg & Haertel). In fact, Thorndike is generally credited as being the founder of educational psychology as a separate discipline (Walberg & Haertel).

Hilgard (1996a) believed that two psychological positions generally shaped American education: Dewey's pragmatism and Thorndike's positivism. John Dewey, with Colonel Parker, founded what is known as the progressive movement in education (Hilgard, 1996b; Walberg & Haertel, 1992). The progressive movement was based upon a philosophy of experiment, use, and innovation. Studies were conducted with children that were designed to investigate the effects of various curricular innovations. Although results were fairly positive, support for the progressive movement waned (Hilgard, 1996b). Nevertheless, Dewey did develop the Chicago School of Functional Psychology

at the University of Chicago. Dewey and others, including G. Stanley Hall, Thorndike, James Baldwin, and Arnold Gesell, "all tried to found educational practice on scientific studies of children" (Walberg & Haertel, p. 6). This focus generally became known as the child study movement. One of the criticisms of the movement was that it became too reductionistic (Walberg & Haertel). However, this reductionism was a persuasive force within the context of Thorndike's positivism.

E. L. Thorndike's position would fall squarely in the philosophical circle of empiricism. Hilgard (1996a) referred to him as "the experimenter" and stated that Thorndike evolved his learning theory while preparing his dissertation on animal learning (p. 995). This dissertation is one of the most cited studies in American psychology (Hilgard). Reflecting the impact of the child study movement, Thorndike focused his efforts on empirical observations, experimentation, and followed highly regarded scientific principles in order to develop a theory of learning. Being a determinist, he believed that research could be utilized to articulate universal "laws of learning" and to understand the connection between stimuli and responses. He sought to use these laws to understand behavior. He did have an impact upon the measurement of behavior [i.e., "cataloguing" human abilities (Walberg & Haertel, 1992, p. 5)]. He promoted the use of schools and clinics as "natural laboratories" within which to articulate theories, and he viewed teaching and therapy as research. However, Thorndike also operated in the same climate as Dewey. Both were affected by the European focus on consciousness stemming in large part from Gestalt psychology and Freud's psychoanalytical movement. This focus changed in the United States in large part due to the efforts of James Watson.

James Watson was considered the foremost advocate of behaviorism in the United States (Walberg & Haertel, 1992). Rejecting mentalistic concepts of thought to explain and predict behavior, he believed that "all psychological phenomenon is [sic] the result of observable events and adhered to a philosophical reductionism in which all cognitive processes have a behavioral counterpart" (Walberg & Haertel, p. 7). This position moved American psychology away from the study of consciousness toward objectivism. Commonly referred to as "neobehaviorism," this form of behaviorism became extremely popular, especially with learning theorists. These theorists included E. R. Guthrie, Edward Tolman, Clark Hull, Kenneth Spence, O. H. Mowrer, and B. F. Skinner. It was Skinner who is most recognized as the leader in what was becoming the overriding force in American educational psychology.

Skinner was the most influential figure in American psychology and educational psychology from 1950-1970, even into the 1980's. He promoted the idea of operant conditioning and the experimental analysis of behavior. Basing his ideas on experimentally collected data from the direct observation of behaviors, he established "reliable laws [that] included reinforcement, punishment, extinction, stimulus control, and discrimination" (Walberg & Haertel, 1992, p. 7). He believed that current school practices harmed learning and promoted the idea of using "teaching machines" and "token reinforcement systems" with which to guide and individualize instruction (Walberg & Haertel). His principles were generally incorporated into the curricula of teacher-training institutions where they exist to this day, albeit in a more limited way.

Evaluation, classification, and training of military personnel were needed during World War II. Testing and measurement became the major focus of this era. According to Walberg and Haertel (1992), much of the early work in instructional design emerged from this military context. At the end of the war, this focus on testing and measurement shifted towards education. Ability grouping and social promotion became standard practices (Hilgard, 1996b).

With the Soviet launch of Sputnik in 1958, there was an immediate and drastic change in focus. Additionally fueled with research findings regarding bias in testing and grouping (e.g., Burton & Jones, 1982; Slavin, 1987), there was a general movement toward the idea of scientific systems of instruction that "implemented, evaluated, and managed instruction" (Walberg & Haertel, 1992, p. 9). Flurries of math and science curriculums were developed with goals of greater objectivity and implementation of new elements such as programmed instruction and learning objectives (Hilgard, 1996b; Walberg & Haertel). Gagne's and Mager's "learning objectives" and "domains of learning" were terms that gained daily use (Hilgard, 1996a). Others attempted to map these objectives onto learning hierarchies such as the taxonomy developed by Benjamin Bloom at the University of Chicago (Walberg & Haertel). A shift from behaviorism to cognitive theories had begun.

The Cognitive Revolution

There were two major developments that contributed to the movement towards cognitivism in the 1960's. One of these developments was the work in the area of systems of instruction (Walberg & Haertel, 1992). Influenced by the availability of new

technology such as audiovisual aids, radio, television, computers, and video, the idea that teaching could be "technical" and programmed began to arise as did a focus on "mastery" of scientific principles, content, and reasoning. After all, America needed to get a man on the moon!

A second development lay in increasing criticisms of behaviorism. Multiple lines of research were calling the premises of universal laws of learning and the power of reinforcement and punishment into question. The cognitive paradigm was moving in to replace the dominance of behaviorism. This cognitive paradigm has had two manifestations.

According to Mayer (1992), there have been three major views of learning over the last century. The first was learning as response acquisition (connectionism and behaviorism). This gave way, during the cognitive revolution, to the two cognitive views. The first of these was a view of learning as knowledge acquisition. Reflected by Dewey's progressive education movement and Piaget's theory of cognitive development, the idea of the learner as an active agent in the acquisition and processing of knowledge became widely accepted. According to Derry (1992), cognitive models of performance during this era were based upon detailed task analyses of specific performances in specific subject domains" (p. 4).

The final view of learning in the last century and the second manifestation of cognitive theory is that learning is knowledge construction. Following the first use of the term in regard to Piaget (cognitive constructivism), the term "constructivism" began to

dominate the literature throughout the 1970's and 80's (Mayer, 1992). Brooks (1990) defined the constructivist perspectives:

> Constructivists believe that knowledge results from individual constructions of reality. From their perspective, learning occurs through the continual creation of rules and hypotheses to explain what is observed. The need to create new rules and formulate new hypotheses occurs when students' present conceptions of reality are thrown out of balance by disparities between those conceptions and new observations. (p. 68)

Constructivism emphasizes active learners, linking new knowledge to old, and applications in authentic situations. It has at its core an "image of learners as active and social constructors of meaning, and an image of learning as an act of construction through social interaction in many contexts" (Anderson et al., 1995, p. 143). Resnick (1989) identified three instructional aspects of learning that together call for forms of instructional theory very different from those that grew out of the earlier associationist and behaviorist psychologies:

> (a) learning is a process of knowledge construction, not knowledge recording or absorption;
> (b) learning is knowledge-dependent, in that people use current knowledge to construct new knowledge; and
> (c) learning is highly tuned by the situation in which it takes place. (pp. 1-2)

A newer entry into this theoretical position is often referred to as the "situated cognition movement". The basic tenet of this movement is that "cognition must be viewed as an integral part of the physical, social, and cultural contexts to which it belongs" (Derry, 1992, p. 5). The result is that, in addition to an emphasis upon real life situations and problems, there is increasing use of the term "community" and "culture":

> Knowledge is an emergent phenomenon of community practice in the sense that it is actively constructed, supported, communicated, hidden,

> distributed, guarded, transformed, extended, and examined within that community. In sum, knowledge is socially negotiated within a community. (p. 6)

Schools are now being viewed as "integrated communities versus schools as autonomous units" (Short & Talley, 1997). Ormrod (1998) stated that there are a number of terms used in referring to constructivism and that little consensus exists regarding how to subdivide it. The subcategories seen in the literature include individual constructivism, social constructivism, radical constructivism, radical relative constructivism, critical constructivism, constructionism, social constructionism, and sociocultural theory. Derry (1992) also mentioned radical constructivism while "community of learners" was the term used by Short and Talley (1997). Regardless of the term or "-ism" used, the point of the matter is that it is a popular position in the field today. The question may well arise, where is the field and how many epistemological camps are there? Is there fragmentation? And, if so, how does this affect the role of educational psychology in teacher education?

Educational Psychology Today: Threats and Fragmentation?

Is the field of educational psychology a unified discipline? There are a number of writers who do not believe this to be the case (e.g., Ball, 1984; Derry, 1992; Hoy, 1996; Ormrod, 1998; Salomon, 1996; Scheurman, Heeringa, Rocklin, & Lohman, 1993; Shuell, 1996; Wolfendale, 1992). In fact, there are a few who doubt that it has ever reached a consensus (Derry, 1992). Scheurman et al. (1993) cited Thorndike in 1910 as stating, "although the contributions of psychology to education have long been recognized, the integrity of educational psychology as a distinct discipline has been a subject of

controversy" (p. 98). Salomon (1992) referred to educational psychology as being fragmented, with vast topics, issues, theories, paradigms, and approaches (as cited by Scheurman et al.). Shuell (1996) also called the field fragmented, but used the term "multifaceted discipline." Ball (1984) recalled his 1971 description of the field as an "academic version of mulligan stew."

Mulligan stew can be quite tasty. One could take the position that such diversity in the field is one of its strengths. Although some in the field hold this position (e.g., Shuell, 1996), there appear to be far more who view it as a weakness (e.g., Derry, 1992; Scheurman et al., 1993; Sternberg, 1996; Wolfendale, 1992). In 1996, Robert Sternberg wrote, "Educational psychology has fallen, but it can get up. It has fallen because of its uncertainty, as a field, as to its own core" (p. 175). Derry (1992) noted that there are a number of competing "epistemological camps." He described three of them in greater detail: cognitive constructivism; cognitive symbolic processing; and radical constructivism.

As noted above, cognitive constructivism became popular in the 1970s and 80s. Arising from memory research, but with a Piagetian base, it focused (and still does) on cognitive structures and memory. Cognitive symbolic processing gained popularity in the late 1980s. The focus here was on performance in the subject areas, or what Mayer (1992) called "subject matter psychology." Mayer further stated that the "psychologies of subject matter" were flourishing during this time. Salomon (1996) agreed, saying the field had "returned to the school and to the learning of real subject matter" (p. 399).

Radical constructivism became very strong in the early 1990s. Although there was still a strong focus on subject matter, as evidenced by emphases in the areas of math and science, how these subjects should be taught was different. With strong Piagetian and Vygotskian roots, radical constructivists take the philosophical position that there is no ontological reasoning, that individual realities are constructed. There is a focus on language and social interactions. Direct instruction is viewed as trivial. Instructors need to engage students in activities where they invent, debate, and design (Derry, 1992).

In terms of movement towards this constructivist paradigm, Ormrod (1998) disagreed that there was even a clear-cut division between behaviorism and cognitivism. Although she reported that many theorists saw a clear-cut distinction, she also stated that "even on this point we do not have total agreement. Some theorists lump behaviorism and information processing theory together and see them as both being separate from cognitivism. They [sic] argue that the former pair are objectivist and mechanistic, whereas cognitivism focuses on how learners organize their understanding of the world in their own idiosyncratic and nonmechanistic fashion" (p. 7). However, she noted that her own recent readings resulted in the observation of many cognitive (or constructivist) notions, even in the behaviorist literature. Thus, the paradigm does seem to have shifted to a more cognitive one.

This cognitive, social, and cultural constructivist view seems to be the current trend and burgeoning identity of educational psychology. However, what does this view mean in terms of the role of educational psychology within the context of teacher education programs of study? What is the role of educational psychology in this arena?

Educational Psychology in Teacher Education: The Foundations Metaphor

As stated earlier in this chapter, William James began presenting lectures on psychological principles applied to education in 1892. Thorndike, in the first journal of educational psychology, stated that the purpose of the discipline was to apply psychological principles to the practice of education (as cited by Mayer, 1992; Peterson, Clark, & Dickson, 1990; Salomon, 1996; Short & Talley, 1997; Walberg & Haertel, 1992). Mayer (1992) quoted Cubberly as saying, in 1921, that educational psychology was the "guiding science of the school" (pp. 2-3).

Educational psychology appears to be one of the mechanisms for professionalizing, or making more "scientific," the practice of teaching. In a sense, it is meant to provide a scientific base, a foundation, for the practice. This foundations metaphor is mentioned often in the literature (e.g., Anderson et al., 1995; Hilgard, 1996a; Peterson, Clark, & Dickson, 1990; Salomon, 1996; Shuell, 1996). Peterson, Clark, and Dickson (1990) stated, "Educational psychology is taught as a foundations course in most teacher education programs; and at least one course on the psychology of human learning is typically required for teacher certification by most states" (p. 325). According to Hoy (1996), the main goal of an educational psychology course in a teacher preparation program is to "help prospective teachers understand, value, and use the knowledge and processes of educational psychology, both in their lives and to support the learning of their future students" (p. 41). Hilgard (1996a) quoted a number of authors such as Grinder (1989) to characterize educational psychology as "a discipline in the middle, as building bridges between the science of psychology and the art of education" (p. 990).

Following the cognitive revolution, the overarching psychological perspective developed more constructivist leanings. This contemporary psychological perspective has a tendency to emphasize "analysis of and action in teaching situations" (Anderson et al., 1995, p. 145). Today, many educational psychologists (and educators) view learners as active and social constructors of meaning and view learning as an act of construction through social interactions in many contexts in which there are interactions between individual learners and situations in which learning occurs (Anderson et al., 1995). Traditional foundations-based courses assumed the student would read, listen, and complete examinations and papers. Focus would be given to learning domain specific knowledge. Connections to practice would be marginal at best. The traditional foundations view that principles, concepts, and theory must be learned first and, for the most part, out of context, runs counter to constructivist theorists who claim that learning cannot be decontextualized (Anderson et al., 1995). Anderson et al. cited Doyle's (1990) discussion related to the role of educational psychology in teacher education:

> Traditionally, the concepts and methods of educational psychology have been considered the primary foundation for research on teaching and teacher education and for the teacher education curriculum. There are several clear indicators, however, that the disciplinary foundation for teachers and teacher education is shifting....The point is not, of course, that educational psychology has no place in teacher education...But space will have to be made for knowledge...that is more situational in character, tied closer to the particulars of curriculum, and framed in ways that capture the event structure of the classroom. (p. 19)

In a large way, much of the current criticism of the foundations metaphor lie in this premise that knowledge is situated within a context, both with respect to the acquisition of knowledge and applications (transfer). According to Shuell (1996), educational

psychology instructors have assumed that their students would acquire "factual or conceptual knowledge rather than applied knowledge—that is, learning about teaching rather than learning how to teach" (p. 9) and assumed that this would transfer. Shuell went on to say that there is good evidence in the literature that transfer does not occur, yet he fails to cite any such evidence.

According to Peterson, Clark, and Dickson (1990), the foundations metaphor view of educational psychology needs to be carefully scrutinized. They draw this conclusion on the basis of four "persisting problems of practice in preparing professionals for a changing profession" (p. 325):

1. Persistent problems related to transfer or application of psychological knowledge. How do teachers transfer college classroom knowledge to practice?
2. A lack of balance between general and content-specific knowledge about learning.
3. A strong need to consider the knowledge and beliefs of prospective teachers.
4. A challenge related to applying knowledge about teachers' learning to the teaching and learning of educational psychology.

After World War II and following the "cognitive revolution," cognitive psychology moved toward being called "advanced" or "applied instructional psychology." Hilgard (1996a) quoted Resnick as saying, in 1981, that, "Instructional psychology, like most research on human learning and development, is now largely cognitive; it is concerned with internal mental processes and how their development can be enhanced through instruction" (p. 1001). He went on to say that "One way of putting it was that psychology was no longer basic psychology applied to education, but was fundamental research on processes of instruction and learning" (p. 1001). This statement seems to match

what Peterson, Clark, and Dickson (1990) were saying. Their four problems of practice seem to be very applied and process oriented. Sternberg's (1996) view seemed to coincide with this applied, process oriented trend when he stated his belief that the "core of educational psychology should be viewed as the study of expertise in the teaching-learning process" (p. 176).

These views represent a significant change. Originally, when educational psychology courses were developed, many were designed as foundations courses. Anderson et al. (1995) cited a number of authors (e.g., Berliner, 1992; Peterson, Dickson, & Clark, 1990; Shulman, 1990) when they stated that there were now "criticisms of the foundational metaphor and courses bases upon it" (p. 143). The foundations metaphor assumes a linear relation between theory and practice. It is this linear relationship that is now being questioned (Shuell, 1996). To Shuell, the "relation between theory and practice is a two-way street" (p. 12). Others see the relationship as being not bi-directional, but best represented as a spiral. According to Peterson, Clark, and Dickson, the prior assumption of basic (lower-order) before higher has recently been challenged. They infer that instructors can do both at same time, relate new to old, but in meaningful ways (i.e., teach math computation in the context of problem-solving). Thus, they concluded that the traditional hierarchical model applied to the teaching of educational psychology (i.e., theory before application) is inconsistent with current research findings.

The Metaphor and Role in Question: Calls for Examination

Glover and Ronning (1987) stated the following:

> By defining itself as the 'middle person' who applied the principles of educational psychology to education, educational psychology has put itself

> in the position of justifying its existence to the rest of psychology and justifying psychology to education. On the one hand, education has criticized educational psychology for being too theoretical and too concerned with research. On the other hand, psychology has accused the field of being too concerned with applications and not processing clearly articulated programs of research. (p. 6)

Clearly, educational psychology is under a microscope. But, is there only one evaluative lens? A review of the available literature focusing upon the relationship of educational psychology and teacher education indicates that there are several lenses that could be used to examine the complexities of this relationship. Starting mid-century, these sources stem from both within and outside of the discipline.

The View Within. Grinder (1989) discussed three ways in which educational psychology had lost its role as a "guide," resulting in much of the disarray of the mid-century: withdrawal, fractionation, and irrelevance. In terms of withdrawal, Grinder believed that educational psychologists failed to accept responsibility for contributing to educational policies. Fragmentation of the field, as noted above, did and still does seem to be a problem. Most would probably agree that a coherent and agreed upon perspective would be desirable. Finally, it appears that educational psychologists have failed to study practical educational problems in natural settings.

However, at the end of the 20th century educational psychologists appear to have begun to overcome some of these problems (Grinder, 1989; Mayer, 1993). According to Grinder, they have begun by participating in public policy debates, starting a somewhat unified cognitive approach, and conducting more research on "how real students learn real educational subject matter" (p. 3). Doyle and Carter (1996) noted that the "distancing from practice" for reasons of professionalization and prestige (science) is

now changing. Peterson, Clark, and Dickson (1990) believed that there is a "growing awareness among educational psychologists of the need to examine their own discipline; [an examination that] needs to focus not only on the learning and teaching of educational psychology, but also on understanding how educational psychology as a course of study influences the knowledge of candidates in teacher preparation." (p. 324).

What direction should this examination take? According to Salomon (1996), there needs to be an "integration of scientific theory development in the badly needed improvement of practice and sound research" (p. 399). He goes further, citing a number of researchers, saying that, even though there is growing interest in social and cultural contexts of learning, distributions of cognitions, design of complex learning environments and the Vygotskian perspective, educational psychologists are not yet doing that nor calling for examination of the field's prevailing assumptions. Scheurman et al. (1993) seemed to agree with this view when they stated, "our data suggest that educational psychology, like cognitive science, is an immature field of inquiry waiting to coalesce into a more thoroughly integrated, if not unified, study of learning, teaching, and schooling" (p. 112).

What are the possible outcomes related to these debates? According to Doyle and Carter (1996), educational psychologists currently assume that psychological reasoning is important to teaching. However, they contended that, "clinical reasoning in teaching is not essentially psychological" (p. 27). One result of this assumption is that educational psychology is "moving from a foundations to a resource focus [wherein] psychological frames are seen as one of several resources that might be useful in enhancing teachers'

understandings of the substance of their work" (p. 27). It is interesting to note that Shuell (1996) cited Shulman (1990) as saying that "scaffolding" might be a better term than "foundation." As the "atomic units of educational psychology" become more "composite molecules" (Salomon, 1996), there will probably be resultant differences in the importance, placement, and actual teaching of educational psychology in teacher education. There will be more innovative approaches to teaching educational psychology in the context of teacher education within real classrooms and schools (Peterson, Clark, & Dickson, 1990). According to Peterson et al., to a large extent the day of the self-contained, lecture-and-discussion, text-and-test course in educational psychology is probably over.

Thus, the discipline of educational psychology appears to be changing due at least to some degree to changes in overall perspectives and a focus from within. According to Hoy (1996), "We are a field with an evolving identity" (p. 44). Yet, there are additional pressures arising from the wider province within which educational psychology operates: teaching and teacher education.

Pressure from Outside. According to Cains and Brown (1996), "The education and training of teachers, long the subject of professional discussion, is undergoing scrutiny and change" (p. 257). Teacher educators are currently engaged in a large-scale inspection process. To a large extent this process has been driven by the national educational reform movement (Peterson et al., 1990). One result is that "the teacher education community is now in the midst of a fundamental debate over what counts as essential knowledge for teaching" (Doyle & Carter, 1996, p. 24). There is a movement

away from traditional notions of educational psychology's role. Joram and Gabriele (1997), in studying pre-service teachers' beliefs, reported that "many of the pre-service teachers in our program believe there is little to be learned about the professional skills of being a teacher from taking an educational psychology course" (p. 6). Sternberg (1996) referred to a personal communication with David Berliner in 1995 when he stated, "fewer and fewer teacher-certification programs are requiring courses in educational psychology, on the grounds that they are not particularly relevant to the teachers' needs" (p. 176). According to Shuell (1996), "In many teacher education programs, educational psychology no longer possesses the preeminent role it once enjoyed" (p. 5). And, it would appear that "educational psychology is often trimmed when cuts need to made in the teacher education program" (Hoy, 1996, p. 42). Anderson et al. (1995) stated:

> Educational psychologists who work within teacher education institutions are at a crossroads that will determine whether and how they continue to participate. We can no longer assume that state certification requirements and habit will continue to guarantee educational psychologists courses to teach and student credit hours to justify faculty positions. (p. 155)

Thus, it would appear that educational psychology must establish its worth to be included in teacher training programs (Berliner & Calfee, 1996; Doyle & Carter, 1996).

Yet, regardless of the supposedly tenuous position of educational psychology, many authors seem to support expanding its role in teacher education (e.g., Anderson et al., 1995; Rocklin, 1996; Shuell, 1996; Snowman, 1997). If the number of books, journals, and citations in the field were quantified, one conclusion would be that educational psychology has gained in visibility over the last 30 years (Walberg & Haertel, 1992). Other writers agree, proposing that the educational reform movement presents an

opportunity to examine all of education and make significant changes (Mayer, 1992; Short & Talley, 1997). According to Mayer (1992), "As the behaviorist grip on educational practices is replaced with cognitively oriented methods, the time is ripe for fundamental changes in the process of instruction" (p. 10). Derry (1992) dissented. While agreeing that educational psychology may be "positioned to become a significant theoretical force in the educational reform movement" (p. 1), he took the stand that considerable fractionalization still exists and that the lack of a unified paradigm does not bode well for the future of educational psychology. However, most agree with Short and Talley (1997) that "the national education standards and their supporting legislation will require massive changes in how education is conducted in the United States, all of which have implications for educational psychology" (p. 3). According to Walberg and Haertel (1992):

> Educational psychology informs many applied areas, including teaching, counseling, special education, school psychology, evaluation, and assessment. In an age of educational reform and concern about the nation's human capital, the discipline has even greater, yet incompletely fulfilled, potential to contribute to policy formulation and decision-making. American educational psychologists have considerable opportunity to make new knowledge on effective educational practices available to policy makers and practitioners. (p. 15)

Snowman (1997) seemed to parallel this argument when he justified educational psychology as helping students become better teachers. He made a three-pronged case for educational psychology: (a) teaching is a complex enterprise that requires an understanding of psychological knowledge and its classroom applications, (b) the research literature contains many useful ideas related to improving learning and instruction, and (c) coursework in educational psychology enhances a teacher's

effectiveness. For support, he referred to Ferguson and Womack's (1993) study in which it was found that grades in education courses, including educational psychology and human development and learning, were better predictors of effectiveness in teaching than performance on the National Teacher Examination.

Clearly there are multiple criticisms and perspectives from which to view those criticisms. The reality is that the role of educational psychology within teacher education programs of study is being seriously questioned. In response to questions about educational psychology and teacher education, the Educational Psychology Division (Division 15) of the American Psychological Association created the Ad hoc Committee on the Teaching of Educational Psychology (Anderson et al., 1995, p. 144). Anderson and company's article, a report from the Ad Hoc Committee, was meant to provoke discussion and further research.

There were international similarities predating the American call. In 1991, a committee was established in the United Kingdom within the British Psychological Society to "examine the applicability of the competencies framework for educational psychology" (Wolfendale, 1992, p. 11). In 1993, the General Assembly of the European Federation of Professional Psychologists set up a task force to conduct a survey of the current training standards and professional practices of educational psychologists residing within those countries (Lunt, 1999). Their final report was published in 1997. It should be noted that the practice of educational psychology in the United Kingdom and Europe generally refers to what Americans call "school psychology." As school psychology is not the focus of this literature review and dissertation research study, these results will

not be discussed here. It seems sufficient to note here that interest in and questions about the field are being raised in a much larger arena beyond the United States.

Although some research has been generated in response to these provocations, it would also seem that more questions have emerged from these efforts. As a final component to this review of literature, some of these studies and resulting questions will be viewed from the perspective of the teaching of educational psychology in teacher education.

The Teaching of Educational Psychology

According to Block (1996), "The basic curricular problem faced by educational psychologists is how to teach educational psychology to educators in such a way that the knowledge taught actually gets used" (p. 484). There are a number of writers and researchers who have discussed the teaching of educational psychology. Publications have focused on general educational psychology knowledge and its relation to performance (e.g., Borg & Falzon, 1991; Cains & Brown, 1996; Lee & McLean, 1978; Wigle & Sylvester, 1996), the effects of field experiences and case use (e.g., Block, 1996; Carter, 1997; Ross, Hughes, & Hill, 1981; Shuell, 1996), analysis of educational psychology texts (e.g., Dutt, Murchison, & Zuege, 1994; Hoy, 1996; Kiewra & Gubbels, 1997), and the degree of attention to students' beliefs and expectations (e.g., Brown & Rose, 1995; Borko & Putnam, 1996; Cains & Brown, 1996; Joram & Gabriele, 1997; Kleinsasser, 1992). In addition, when educational psychology should be taken (Hoy, 1996), the training of educational psychology instructors (e.g., Cohen & Russell, 1997; Scheurman, Heeringa, Rocklin, & Lohman, 1993; Shuell, 1996), and the content and

methods of teaching educational psychology (e.g., Clements, 1991; DuBois & Staley, 1997; Kiewra & Gubbels, 1997; Lee & McLean, 1978; Ormrod, 1998; Renninger, 1996; Snowman, 1997; Strom, 1991) have all been discussed. However, as noted by Blumenthal and Anderson (1996), there is a definite lack of systematic empirical research currently underway designed to focus on the teaching of educational psychology. This situation is revealed when the literature regarding the teaching of educational psychology is reviewed.

Knowledge of Educational Psychology

As is the case for many disciplines, the professionalization of teaching requires that teachers master a specialized body of knowledge (Strom, 1991). Notwithstanding achieving increased status, Strom proposed that the types of knowledge, conceptual frameworks, and modes of inquiry for teaching be delineated. She noted that this was a huge challenge. Several knowledge base frameworks for the field of education have emerged due to recent emphases upon accreditation and/or membership in organizations such as the National Council for the Accreditation of Teacher Education (NCATE), American Association of Colleges for Teacher Education (AACTE), or the Association of Teacher Educators (ATE). Wigle and Sylvester (1996) reinforced the need for a diverse knowledge base. They discussed a body of research in classrooms that appeared to indicate that knowledge of learners, the learning process, effective teaching practices, and applications of psychological knowledge to education all are a part of the content of educational psychology. They stated, "If education is ever to be a 'true profession,' it must begin to ensure that its members are well versed in its knowledge base" and that

undergraduate and graduate courses in educational psychology must be given a more prominent role in the preparation of teachers (pp. 37-38). But, what is the research as to knowledge of educational psychology and teacher performance?

Beyond Snowman's (1997) reference to the work of Ferguson and Womack (1993), who documented a relationship between grades in education courses and effectiveness in teaching, the only other study designed to examine the relationship between knowledge and performance was conducted in the United Kingdom by Borg and Falzon (1991). Similar to Ferguson and Womack, Borg and Falzon found that that performance in an educational psychology course was an efficient predictor of overall performance in the program (even when corrected for their grade in educational psychology). However, it should be noted here that their study was designed to examine the performance in the teacher education program, not later teaching effectiveness.

There appears to be only one additional study that was crafted to directly investigate the perceived utility of educational psychology knowledge. It should be noted that the investigators did not look at performance measures. Wigle and Sylvester (1996) used a questionnaire to ascertain the knowledge of educational psychology held by K-12 regular and special educators. Their 20 question multiple-choice instrument was administered to 133 respondents. The respondents were grouped and compared along three dimensions: years of teaching experience; teaching position; and highest degree held. No significant differences were found in any area targeted for study. More troubling for the researchers was that only a small number of respondents were able to correctly answer a high

percentage of the questions. The authors noted the need for additional research in this area.

In 1984, Veenman stated that the three most frequently mentioned problems of beginning teachers were classroom management, motivation, and dealing with individual differences. He and others (e.g., Snowman, 1997) have noted that these are all usually topics covered in an educational psychology course. Is it that the topics are not covered well, or that the topics weren't being covered? In order to attempt to address this issue, the content and methods of educational psychology are reviewed below.

Content and Methods

Anderson et al. (1995) recommended that one goal of an educational psychology course should be the development of a contemporary psychological perspective. This perspective, with an image of learners as active and social constructors of meaning, was discussed above. Another goal noted by Anderson et al. was to develop a "teacher's psychological perspective, emphasizing analysis of and action in teaching situations" (p. 145). They defended the need for these perspectives with a well-stated argument:

> A psychological perspective provides a teacher with a way to "get hold" of a complex situation and think about its problems and possibilities in light of views of human learning. This advantage is not afforded by mere knowledge about concepts, principles, and theories; it is only manifested when those ideas are tied together as coherent frames that suggest when and how the ideas should be used. (p. 145)

The development of a "perspective" implies something different than what has historically been included in the traditionally taught educational psychology course.

Traditionally, the contents of the educational psychology course have included: learning; development; motivation; individual differences; intelligence; and measurement

(Anderson et al., 1995; Peterson, Clark, & Dickson, 1990). Shuell (1996) stated that the typical course now includes human learning and cognition, human development, motivation, tests and measurements, individual and group differences, research on teaching, social cultural factors and special populations, classroom management and discipline, and grading. Marshall (1996) added that there is an increasing diversity of content included and a need for more content (the texts are getting larger).

Yet, the changes appear to be more than just a content issue. Some authors have noted that the topics are still pretty much the same, but the approaches are different (Anderson et al., 1995; Shuell, 1996). Anderson et al. stated that teaching is multidimensional and that teacher knowledge needs to be "connected and integrated, not learned as isolated bits and pieces" (p. 148). They concluded that one implication of this view is that topics should be introduced and then revisited (i.e., that teachers should not just spend one week on motivation and two weeks on development). In traditional foundations-based courses, it was assumed that students would read, listen, complete examinations and papers, and learn theory and principles for later application (Anderson et al.). However, the more current view is that learning is cognitively, socially, and culturally situated. This changed perspective creates a need to change the tasks in educational psychology classes. Their review of the literature related to academic tasks and transfer of learning led them to five considerations that could be used to guide selection and design of tasks in the educational psychology class:

1. A set of tasks should provide multiple representations of key ideas across situations.

2. A set of tasks (though not necessarily every task) should feel authentic, representing as much of the complexity of teaching as possible without overwhelming students.
3. Tasks should be designed to help make explicit prospective teachers' beliefs and conceptions, and to engage them in explaining their own beliefs and considering alternative points of view.
4. Tasks should create opportunities for public interactions among the students and between the instructor and students.
5. Grading and assessment should be congruent with the other considerations. (p. 152)

The changes listed above related to the content and recommended tasks in educational psychology coursework offerings would seem to imply that some changes be made related to the methodologies used to teach educational psychology. Has this been the case? Not so, according to Peterson et al. (1990) who reported that even though the field of educational psychology is moving towards a more constructivist paradigm, many educational psychology instructors are still using the traditional lecture method of instruction. They censured the mismatch.

The field seems to be in the middle of a content/methods dilemma (Peterson et al., 1990). Peterson et al. questioned whether instructors should focus on teachers' own learning and development (teacher as adult learner approach) or on the learning and development of school children (psychology of young learners approach). In terms of publications that followed Peterson et al. and Anderson et al. (1995), it seems that the current trend focuses upon the former.

In response to the call of the Anderson group, Renninger (1996) made an effort to address both components related to this dilemma. In Renninger's article, an approach to teaching educational psychology by focusing on learning and its implications for instruction was introduced. Her statement that "this approach to teaching educational

psychology is designed to facilitate students' developing knowledge about how people learn and, given this information, how pupils might most effectively be taught" (p. 63) appears to include objectives to address both the "teacher's own learning" and the "learning of school children" advocated by Peterson et al. (1990). The course was noted as containing a multifaceted set of long-term assignments that required students to develop a model of learning and use it as a basis for making decisions about materials, activities, and methods used in a classroom. Positive conclusions were reached about teaching this way, but no formal evaluation was made. This seems to be the custom throughout this area of literature.

In 1996, Blumenthal, Hicks, and Krajcik described teaching an introductory educational psychology course utilizing "instructional planning" as a central organizer. Their focus was upon helping students develop psychological perspectives on teaching through authentic tasks; to begin to "think like teachers" (p. 60). Although the conclusions reached by the authors were generally positive regarding this method, empirical support was absent. There was no formal evaluation related to the outcomes.

Another publication that seemed to address the call of the Anderson group's report was written by DuBois and Staley (1997). They agreed with the belief that a student should develop a coherent psychological perspective as a result of taking an educational psychology course and suggested that the model to do so would be one that focused upon the student becoming a "self-regulated" learner. Within this context, they developed two general goals for the course and discussed preliminary results from the modifications. The first goal was to help their students become self-regulated learners (gain productive

learning strategies). The second goal was to help their students understand how they could embed strategy instruction into their own teaching.

Although DuBois and Staley (1997) presented a very detailed model for a new method of teaching educational psychology, they noted, "at this stage in the development of the course, we have engaged in informal evaluations of a formative nature. Formal evaluations to this point have been limited to surveys of student satisfaction which have been very positive" (p. 193). They ended with a statement of need for and a focus on future evaluations. This echoes the previously discussed views of Blumenthal, Hicks, and Krajcik (1996).

In one qualitative study, the perceptions of students who were taught using primary sources as opposed to a traditional text were targeted for study (Dutt, Murchison, & Zuege, 1994). Although positive responses were noted, there was a very small sample size and the interview coding strategies were not clearly stated. The need for more research in the area is evident. Also focused on how educational psychology is taught, Ormrod (1998) recommended the inclusion of content and methods focusing less on the "isms" (i.e., behaviorism, cognitivism) than on "big ideas." However and again, no formal evaluation of the suggestions exists.

Interestingly, the only two studies present in the literature that appear to have included more formal evaluations related to methods of teaching educational psychology both pre-date the call of the Anderson group. In 1978, Lee and McLean compared achievement levels and attitudes related to educational psychology and teaching across

three methods of teaching educational psychology. The three methods were a "modified mastery" learning method based upon Bloom's Learning for Mastery model, a traditional lecture method, and a combined method (mastery and lecture). The achievement for the mastery-learning group was found to be significantly higher on the outcome measures compared to the other two groups. In addition, there was a significant improvement in the attitudes related to educational psychology among the participants in the mastery group. There were no significant differences found across groups related to attitudes about teaching, but all groups showed improvement. Clements (1991) reported that she followed Lee and McLean's research program and made reference to it. However, her focus was upon whether students would obtain higher levels of learning using a "guided inquiry" approach versus a traditional lecture approach. The results were inconclusive with no significant differences found between groups.

In addition to questions associated with the content and methods of instruction, questions are often raised related to the almost impossible amount of information to be addressed in a one-semester educational psychology course and/or how well the course(s) are integrated within the context of a program of study in teacher education (Anderson et al., 1995; Hoy, 1996; Shuell, 1996). According to Hoy, "there is no one best way to teach" educational psychology (p.42). However, the Anderson group noted, "a single course is insufficient to promote significant, lasting change" (p. 153). Shuell appeared to agree when he stated that, "The nature of the educational psychology experience within the teacher preparation program should transcend a single course (or even two) on educational psychology" (p. 12). He recommended combining courses and team

teaching. Rocklin (1996) agreed, especially with respect to the mentoring of new teachers of education and educational psychology. Block (1996) discussed possible movement away from discipline-based methods of instruction to more problem-based methods. This was echoed by Marshall (1996) who stated a need for the greater use of pedagogical strategies in educational psychology such as "field experiences, videotapes and transcripts, tasks that are authentically challenging for pre-service teachers, and generation of multiple solutions" (p. 32). Peterson, Clark, and Dickson (1990) recommended teaching with cases to promote positive transfer.

Field Experiences and Cases

Shuell (1996) supported the position of Peterson et al. (1990), stating that educational psychology courses need to include applied reflections and cases and simulations and practical situations: "there needs to be an opportunity for students to take some sort of action (even if it is a simulation) and receive information in the adequacy of his or her performance" (p. 10). In general, most of the authors in the discipline appear to support the use of field experiences and/or cases in educational psychology courses. However, research results have not conclusively supported this recommendation. Ross, Hughes, and Hill (1981) cited a number of studies (e.g., Ingle & Robinson, 1965; Ross et al., 1980; Zaret, 1968) in which few or no differences were found in either attitudes or achievement between students who participated in field experiences and control students who did not. Cains and Brown (1996) and Joram and Gabriele (1997) provided some evidence that could be used to support the need for the inclusion of more field-based training. In their study, Cains and Brown looked at teacher preparation in Great Britain.

They compared students completing a standard baccalaureate type program with those completing a one-year program after obtaining another degree. Americans would probably call this an alternative or fifth year program of studies. Students in the longer (baccalaureate) program, which incorporated more fieldwork, tended to perform better. But, the higher performance levels were found in the more domain specific areas such as math and science. The investigators noted the similarities between the "science" of psychology and the "science" of math and science as a possible explanation. Joram and Gabriele, however, implied that the value of field experiences is often a double-edged sword. Instructors need to be careful. Ross, Hughes, and Hill (1981) reported that, in contrast to traditionally taught, theoretically-based teacher education programs, programs emphasizing field work and instruction by teachers narrowed the range of settings for which those teachers were prepared.

Ross, Hughes, and Hill (1981) attempted to investigate the effects of field experiences using a "more structured form" of experience. They utilized experimental and control groups. Although field experiences were used in both groups, the treatment group's experiences were designed to focus on application of concepts while the control group's were made to appear as part of an assignment independent of the field experience. The dependent variables were the achievement scores on a course examination and the posttest scores on specific concepts. Significant main effects were found for the treatment on the posttest, but not on the achievement test. In discussing why they found slightly more positive results than were reported in previous studies, the authors noted the following contrast: "the important design consideration is that the

activities students perform and the evaluations of outcomes are made relevant to that [specific course content] learning" (p. 106).

In reality, many educational psychology courses do not include a field-based experience component. Some instructors have tended to use cases as an alternative (Anderson et al., 1995). This is a fairly recent phenomenon. Due to this recent addition, many authors have noted the lack of and need for empirical research related to the use of cases in educational psychology courses (Anderson et al.; Block, 1996). Shuell (1996) agreed, yet cautioned instructors to include multiple types of activities in the design of their courses. According to Shuell, "Cases are good for developing the ability to analyze, but other experiences (e.g., simulations, role playing, certain kinds of projects) are better for developing competent action" (p. 12). Rocklin (1996) also discussed case use and questioned whether instructors were taking the knowledge and prior experience of the student into consideration. He stated, "The interaction of students' level of experience and case complexity deserves careful study" (p. 37).

This "careful study" may be impeded by a factor found by Block (1996). She reviewed educational psychology texts in order to describe how cases were used as a method for linking theory to practice. She found no single "case-method" within the texts compared and concluded that cases do not either drive or have a singular focus in the current educational psychology curriculum. Case use in most texts was described as an adjunctive or supportive function. She also made a call for more research, but with the caution that the variety of case use is taken into consideration.

One of the differences found by Block (1996) in terms of cases was the degree of authenticity. In some situations, cases appeared to mirror the authenticity and complexity of actual teaching situations, or in fact were transcripts or videos of actual classroom practices. In others, the cases seemed to be "made to order," less complex, and more direct illustrations of a concept associated with a specific chapter in the educational psychology text in which it was found. Dutt, Murchison, and Zuege (1994) recommended the use of primary sources (including actual cases) as a way to increase student engagement, satisfaction, and understanding of content. In their qualitative study, they found overall positive results in these areas as compared to students using traditional texts, but noted that additional research was warranted.

Texts

Another conclusion reached by Block (1996) was that "Historically, educational psychology has been plagued by inadequate textbooks" (p. 484). Marshall (1996) noted that texts were not very authentic. In 1990, Peterson et al. noted that the content and methods of educational psychology seem to have been determined by what was in the textbooks, reflecting a foundations metaphor. Block noted that there is less criticism of foundations metaphor-based texts today due to the expansion of knowledge related to teaching, classroom processes, and student learning. In reviewing texts for case usage, she noted that texts appear to have become much more practice, application, or problem-based as opposed to what has traditionally been theoretical, discipline, and conceptual knowledge focused. This statement appears to have support in terms of the conclusions of many authors who have reviewed texts (i.e., Ash & Love-Clark, 1985; Goetz &

Chatman, 1985; Hoy, 1996; Scheurman, Heeringa, Rocklin, & Lohman, 1993; Snowman, 1997).

In perhaps one of the most comprehensive reviews of texts, Snowman (1997) repeated a 1977 study by Feldhusen to see if the content of educational psychology texts had changed over the intervening 20 years. He found that the topics covered were still very broad, but that there was a definite change with respect to emphasizing a more applied focus. Most texts covered between 12-15 chapters and reflected about a dozen major topic areas that had not changed significantly except for more coverage related to cognitive psychology, especially cognitive, social, and cultural constructive views of educational psychology. His survey of faculty using these texts revealed that they usually wanted to cover all of the topics in order to expose students to the breadth of information in the field. However, many admitted that they were forced to omit many topics due to a lack of time. These findings appear to be congruent with the earlier statements made by many authors (e.g., Anderson et al., 1995; Hoy, 1996; Shuell, 1996) related to the vast amount of information to be addressed in a one-semester educational psychology course.

Emphasis on Teachers' Beliefs and Expectations

In addition to concerns related to adequate coverage, the content of texts, and the focus on problem-based authentic applications, the shift towards a more constructivist paradigm has resulted in another general change in educational psychology courses. In line with the position that prior knowledge affects the acquisition or construction of new knowledge, there appears to be support for the need to evaluate and possibly make changes in the beliefs and expectations of pre-service teachers as part of an effective

educational psychology experience. According to Peterson et al. (1990), in the eighties more attention was paid to teachers' thinking and knowledge development (i.e., content) instead of teacher behaviors. They expressed the belief that this practice was more cross-sectional in nature, but was changing to be more inclusive and longitudinal. The development of teachers' knowledge, skills, and dispositions appears to be center stage. Anderson et al. (1995) noted a shift that included more social and ethical (dispositional) content, and referred to common topics included in more current educational psychology courses that seem to imply a focus on the development of positive student teacher dispositions [i.e., "locus of control, attribution theory, strategic knowledge underlying self-regulation, and teacher expectations" (p. 149)].

According to Carter (1997), "Students come to teacher education programs with distinct convictions regarding what makes a good teacher [and] a key task for teacher educators is to assist students in understanding how their previous experiences impact their beliefs about teaching" (p. 1). Joram and Gabriele (1997) looked at teacher's beliefs about teaching and learning pre- and post-completion of an educational psychology course. Although the results were not very conclusive, they stated that targeting preconceptions had some impact and they recommended further study. Carter studied effects related to the use of reflective journals upon student beliefs and attitudes. In this qualitative study, students were required to write eleven reflective journals. Student interviews, surveys, and informal conversations were used to compile a data set. He reported that students felt that the overall value of the course was increased and that the journals helped students reflect upon course material. However, the results were clearly

not conclusive with respect to whether the students were open to new approaches as a result of the use of reflective journals and/or had changed their beliefs about educational psychology.

Anderson et al. (1995) stated that prior beliefs affect a number of areas such as the student's views of learning and intelligence, and that pre-service teachers need to carefully examine and transform their assumptions. They discussed the research that has been conducted on college students' epistemological beliefs (e.g., Kitchener, 1983, 1986; Kitchener & King, 1981; Kuhn, 1991; Perry, 1970, 1981) and the models that have been developed that suggest that students move through three positions regarding knowledge and evidence. The first position is the absolutist position, whereby the student believes there is a right answer for everything. They then move to the multiple-relativist position, where they believe that are no right answers and/or good criteria and that all answers could be correct. Finally, students enter a more evaluative position, where they begin to see that some answers are more right than others and that valid criteria can be developed to make informed decisions. As they teach educational psychology, instructors need to assess where the students are along this continuum in order to be able to effect change in the students' belief systems. Another area for consideration is when students are taking the educational psychology course(s) within their program of studies. At different points, they could be functioning at different levels along the three-position continuum.

When To Take Educational Psychology

When is the optimum time to take educational psychology? According to Hoy (1996), "there is no good time to teach the course" (p. 42). She felt that if the course

were taken early, it was probably too theoretical. If taken later, the students are probably too involved in the major and getting ready to student teach for them to focus on the contents of the educational psychology course. She concluded that educational psychology is "seldom well integrated" (p. 42) with the program and often redundant. This varies according to who is teaching the course, how they are trained, and program/course integration.

Who Teaches Educational Psychology?

The teaching of educational psychology in terms of who is teaching it and their training is one of the least investigated areas. Although authors (e.g., Anderson et al., 1995; Cohen & Russell, 1997; Marshall, 1996; Peterson et al., 1990; Scheurman et al., 1993) have made numerous recommendations regarding a set of desirable characteristics for instructors of educational psychology, empirical study in the area is very limited. The Anderson group noted that there is "little research-based knowledge" to guide the training and teaching of educational psychology (p. 154). Rocklin (1996) stated similar views. Most authors appear to have based their arguments upon philosophical or theoretical positions, not empirically-based positions.

According to Anderson et al. (1995), many courses are taught by graduate assistants or new professors. Assistance is rarely provided to these novice teachers. The support of novice instructors was a factor noted by Shuell in 1996 when he discussed the lack of supervised teaching experiences for new instructors of educational psychology. Cohen and Russell (1997) reinforced the need to investigate the teaching of educational psychology, especially with regard to nurturing novice instructors, in their very limited

qualitative study. In their "action research" project, notes and impressions of one novice teacher of educational psychology were systematically analyzed. They recommended that novices need both "experts to help scaffold their learning [of how to teach educational psychology] and a safe colleague with whom to 'let it all hang out'" (p. 19).

In addition to the small study by Cohen and Russell (1997), Scheurman et al. (1993) conducted one of the only other studies available in the literature. In this study, Scheurman et al. looked at universities that offered graduate degrees in educational psychology (36 granted the Master degree and 39 the Doctorate). The investigators made an effort to determine patterns related to where the programs were "housed" and the degree requirements. They found that the majority of the programs were housed in schools or colleges of education, usually independent of university departments of psychology. This split has also been noted by Wolfendale (1992) prior to this study and Sternberg (1996) afterwards. The degrees were usually associated with programs in school psychology, counseling, or educational technology. The degree requirements most often included coursework in the areas of statistics, research, and measurement. Courses in learning and cognition, general educational psychology, and development were found to be the next most often required courses. They found it interesting that courses related to individual differences (i.e., intelligence), teaching, and school psychology were not mentioned and/or required very infrequently at best. Given that the discipline of educational psychology was expected to serve as a "link" to schooling, they reported that they were surprised to find little, if any, evidence of serious attempts being made to connect the study of educational psychology to the study of schooling [i.e., "the

importance of schools as a distinct context for the methods and applications of psychology, especially regarding the study of teaching and the individual student, was curiously absent in the literature of educational psychology programs" (p. 107)]. One conclusion reached was that educational psychology curricula seem to be based upon an implicit assumption that "graduate students can learn about teaching and learning in school without any coursework on teaching or schools" (p. 113). They implored schools to include more school-based experiences for graduate students, as have Marshall (1996) and Peterson et al. (1990). In addition, Berninger and Corina (1998) noted that educational psychologists need to be more conversant with information from neuroscience and called for "bi-directional collaboration" (p. 346), implying that, in addition to connections to K-12 schools, more connections were needed to psychology departments within the universities.

Rocklin (1996), in his discussion regarding who teaches and where educational psychology is housed stated, "No census of educational psychology instructors exists" (p. 38). However, such a census was undertaken in Europe. In 1999, Lunt described results from the European Task Force. Lunt noted no consistent pattern of training in educational psychology across the countries targeted for the study. The Anderson group (1995) and Rocklin's calls for the need to do research related to the teaching and learning of educational psychologists is certainly supported in the literature.

Summary

In this review of literature, which included a short history of educational psychology and examination of the role of educational psychology in teacher education, one issue

appeared constant, the need to investigate the teaching educational psychology in teacher education programs of study. The lack of systematic research in this area has been clearly documented as well as possible foci for investigation. In 1996, Rocklin noted a number of dimensions along which the teaching of educational psychology could be investigated. These dimensions included student characteristics, instructor characteristics, and institutional/course characteristics. Possible student characteristics included maturity, prior experience and knowledge base, and heterogeneity. Instructor characteristics included experience in both K-12 classrooms and college. Institutional/course indices included degree of course and program integration and placement, class size, course level, and institutional reward structure. Other literature in this review stressed the need for investigation into the use of cases and field experiences, training of instructors, content and methods of instruction, and educational psychology knowledge of students.

In response to these calls, a research team was formed between two universities in the Chicago area (Johnson, 1998, 1999; Morgan, 1998, 2001). Multiple individual studies are contributing in various ways to this ongoing teaching educational psychology research project. The goals of this project are to improve the teaching of educational psychology and examine the role of educational psychology within the teacher education program of studies. The purpose of this dissertation study was to investigate the teaching of educational psychology in teacher preparation programs along dimensions partially derived from Rocklin (1996). These dimensions include student characteristics, instructor characteristics, and institutional/course characteristics.

CHAPTER III

METHOD

Hypotheses

Educational psychology courses taught at both the undergraduate and graduate level within programs of teacher education programs of study were targeted for systematic study. The following null hypotheses were tested:

1. There are no significant differences in the outcome measures across student characteristic categories.
2. There are no significant differences in the outcome measures across instructor characteristic categories.
3. There are no significant differences in the outcome measures across institution/course characteristic categories.
4. There are no significant interactions among student, instructor, institution/course characteristic categories, and the outcome measures.
5. There are no significant relationships among student, instructor, institution/course characteristic categories, and the outcome measures.

Participants

There were multiple entry points for participation in this research project. The original research team was formed in the Fall of 1997 at one of the institutions. Composed of doctoral candidates and faculty, the overall goal of this team was to develop and provide collaborative support for a number of possible research initiatives. The major initiative was a response to the call of the Anderson et al. (1995) group. One area of interest related

to the teaching of educational psychology. Two members of the team were instructors at other institutions. A decision was made to investigate the teaching of educational psychology across institutions along some of the dimensions noted by Rocklin (1996). Following instrument development and Institutional Review for the Protection of Human Subjects approval, the first term of data collection occurred in the Spring (Winter) of 1998 at three institutions.

Following a conference presentation by members of the research team with some preliminary findings in the Fall of 1998 (Johnson et al., 1998; Morgan et al., 1998), an instructor at a fourth institution joined the team for the Fall of 1999 term. Over the course of this study, four institutions were targeted for study and 20 instructors participated. A total of 721 students participated in the study.

It should be noted that there were different options available to those instructors and students who chose to participate in this dissertation research project. Members of the research team who were teaching educational psychology classes were encouraged to ask other instructors at their institutions to participate. Instructor participants were given one or all of the following options related to their level of participation:

Administer pre- and/or post-assessments to their students.
Provide course materials to the primary researcher.
Sit for and complete an interview related to their course.

Students enrolled in the sections targeted for study were given one or all of the following options related to their level of participation:

Completion of a pre-assessment.
Completion of a post-assessment.
Completion a telephone interview related to the course.

Give permission for their final grade for the course to be released to the primary investigator by their instructor.

All levels of participation were voluntary and confidential. Names were not used in the database. Institutions, instructors, and students were issued special identification numbers. Instructor participants were informed of this verbally at the first solicitation. Student participants were informed of this guarantee of confidentiality and the voluntary nature of their participation in three ways: it was stated within the context of the assessment instruments; the instructors were asked to state it verbally upon instrument distribution; and the interviewer stated it at the beginning of all telephone interviews.

Procedures

As stated above, the research team was formed in the Fall of 1997 and began collecting data in the Spring (Winter) of 1998 following instrument development and human subjects approval. Due to the nature of the instrument, there were some concerns expressed by members of the research team regarding a possible test familiarity effect. In an effort to alleviate this effect, courses targeted for study were randomly assigned to one of three conditions: pre-assessment only; post-assessment only; or both pre- and post-assessment conditions.

Once verbal consent to participate was obtained, cooperating instructors were sent a packet of materials to be completed. This packet was sent prior to the start of the term if they were selected for the pre-assessment or pre- and post-assessment conditions. If they were selected for the post-assessment only condition, the packet was sent near the end of the term. The packets contained the assessment instruments for the student participants and a letter to the instructor. This letter included instructions for the administration of the

assessment instrument and asked the instructor to submit the descriptive course materials needed for the content analyses. A sample copy of a letter is presented in Appendix A.

Information the instructors were asked to provide included a vita and course materials (course outlines, syllabi, bibliography, sample examinations and activities, class size, and participating students' grades). In addition to the submission of specific materials, seven instructors consented to be interviewed (by telephone or in person). The interviewer was a graduate assistant from one of the participating institutions who was a student in a program not directly affiliated with the disciplinary course work offerings in educational psychology. This assistant did not know the instructors, have them as an instructor, nor know any of the students included in the study.

The research team set a goal of 10% of each section to be selected for the student interviews. This 10% would be randomly selected from the students who indicated their willingness to be interviewed by providing their telephone number on one of the assessment instruments. If less than 10% of the students in a section provided their telephone number, all who provided a telephone number were called and asked to sit for an interview. For example, if the course had 20 students and seven students provided a telephone number, two were randomly drawn for interviews. However, if another section with 25 students only had two students who provided a telephone number, both were called. The same graduate assistant who interviewed instructors conducted all of the students' interviews. Student interviews were conducted for 18 sections of the educational psychology courses which resulted in a total of 40 student interviews.

Instruments

Assessment Instruments

Once the teaching of educational psychology was targeted for systematic study, the research team made a decision to develop an instrument to be used with students taking educational psychology courses at the institutions targeted for study. They then decided to develop a pre- and posttest instrument. The instruments for this research were developed by the members of the original research team in a regularly scheduled set of meetings held during the fall of the 1997 term. Two major goals of the design of the instruments were to obtain data regarding the characteristics of educational psychology students along similar dimensions as those noted by Rocklin (1996) and to create a database regarding multiple outcomes.

The characteristics of students (predictor variables) were grouped into two major categories (demographic and student status characteristics). The demographic characteristics selected by the team for investigation included: age; gender; and ethnicity. The educational status characteristics included: major; college attendance (full- or part-time); level (undergraduate or graduate); course attendance (primarily daytime or evening); and previous degree(s).

The second goal was one outcome measure (a dependent variable) that was agreed upon by the team, the student's knowledge about the content (i.e., discipline) of educational psychology. Members of the team systematically reviewed the content coverage within the leading educational psychology textbooks, test banks, and the state (Illinois) teacher certification test objectives. A set of multiple-choice questions was then

developed from these materials and selected for inclusion in the instrument to the participating students as a measure of basic educational psychology content knowledge.

Another outcome the research team decided to investigate was the student's ability to appropriately sequence an instructional event. For example, one of the team members provided an exercise she used in her course that listed the components of a lesson related to classifying potato chips. The nine steps for this "potato chip classification" lesson were shuffled and listed in an incorrect order on the instrument. Students completing this exercise were asked to rank order the steps for how they thought the lesson should be implemented.

A final outcome to be included in the instrument was related to the use of alternative assessments. One of the team members was interested in the types of assessment instruments and/or procedures presented and discussed in educational psychology texts and/or courses. That team member used this data for a separate research initiative. The team created a list of sixteen assessment possibilities. The sixteen possibilities included: written examinations and quizzes; portfolios; projects; research papers; thought papers; reflective journals; classroom participation; presentations; verbal questioning; student developed tests; debates; think aloud protocols; learning logs; exhibits; case studies; and actual performances. Once the possible types of assessment were listed, the research team decided that the student's preference for multiple/alternative methods of assessment could also be quantified in some way. It was decided that it was perhaps best to ask a two level question. For each assessment possibility listed, the respondent would be asked to check those that were discussed in their educational psychology course and to place a star by

those possibilities that they believed they might use in their own classroom. The number of starred items could then be summated for each respondent indicating the self-reported degree of diverse and alternative modes of assessment.

Another team member was proposed to qualitatively investigate the content of the educational psychology courses. She was interested in the student's definition of learning and whether the diversification of instruction, higher order and critical thinking skills, and motivational strategies were addressed within the context of these courses. Four open-ended content evaluation questions developed by that researcher for her individual research initiative were proposed for inclusion in the assessment for the present investigation. The second question she developed was "Please list any examples of things done in this course that addressed how you as a teacher can diversify instruction to meet individual differences (i.e., multiple intelligences, learning styles, cultural diversity)." The principal investigator concluded that answers to this question could also be used in the present study as one of the sources of information for the variable regarding instructional methods/practices in the courses of record. This variable is discussed in detail in the design and analysis section of this chapter.

A change in the student's knowledge base related to educational psychology was a goal in terms of selecting the outcome measures. Therefore, the team decided to include the multiple choice educational psychology assessment in all pre- and post-instruments so that changes in the educational psychology knowledge base could be documented both holistically across the sections targeted for study and specifically in terms of the individual students who completed both the pre- and post-assessment measures. The sequencing of

instruction, alternative assessment, and content evaluation questions were determined by the team to be more appropriate for students to address upon the completion of the course. Thus, the pre-assessment instruments included the student characteristics set of questions and a set of the multiple-choice basic educational psychology theory focused questions. The post-assessment included the student characteristics set of questions, a set of the multiple-choice basic educational psychology theory focused questions, the four content evaluation questions, the instructional sequence exercise, and the alternative assessment component. A sample assessment is available in Appendix B.

Given that the team developed these instruments specifically for the purposes of this study and the other research efforts described above, no published validity or reliability statistics are available at this time. However, the primary researcher did have another instructor distribute a sample of the post-assessment instrument at the end of the Fall 1997 term to graduate students in a graduate course in educational assessment as part of an end of the term assessment discussion and in-class group exercise. The students were asked to critically evaluate the instrument and provide feedback on it. As a result of this feedback, the primary researcher made some changes in wording and layout that would be a basis for improving the validity of the instrument. These changes were systematically reviewed by the team in December and approved by a unanimous vote. These instruments were then used starting with the Spring (Winter) 1998 term.

Interview Instruments

During the Spring term, another member of the research team became interested in describing the teaching of educational psychology in terms of a course/instructor focus

from a student's and/or instructor's point of view. In conjunction with the other members of the research team and using the current literature related to teaching educational psychology, he developed a list of six possible organizational structures/goals. These included: the traditional foundations metaphor; the overall goal; the anchorage within contemporary psychological perspective(s); a focus on critical thinking (and viewing the teacher as researcher); expert-novice learner focus; and a community of learners focus. A table with the organizational structures outlined and explained in greater detail is available in Appendix C.

These structures were used by research team members to develop a set of interview questions to be used with the professors and students targeted for study. The interview schedules were open-ended. The data collected was qualitatively coded and used in another study. Samples of the interview questions are available in Appendix D. For the purposes of the present study, this researcher felt that some of the interview questions could be utilized as one of the sources of information related to documenting instructional practices in the course. The interview questions used for this variable were questions 8-17, 19, and 24 of the professor interviews and questions 7-16, and 18 of the student interviews. The questions used in this study were as follows:

Professor Probes Used:

Describe your overall conceptual framework? What do you consider to be the three most important things students should learn in the educational psychology class?
What type of instructional methods did you use?
What are your views related to viewing teaching as research?
Did a cognitive science view of learning play a large part in your class? E/N (Expert/novice)? COL (Community of Learners)?
Did a behavioral classroom management view play a large part in your class?

How did you design your course to meet the instructional needs of students from underrepresented groups?
Describe your views of cognitive, social, and cultural constructivism.
Describe your view of humanism.
Would you describe yourself as a postmodernist?
Would you describe yourself as a feminist?
Overall, what would you say is your main instructional method?
What was your overall goal in teaching educational psychology (Why did you teach the class)?

Student Probes Used:

What were the three most important things that you learned in the course?
What type of instructional practices/methods did the professor use?
How did your professor cover teaching as research?
Did a cognitive science view of learning play a large part in your class? E/N (Expert/novice)? COL (Community of Learners)?
Did a behavioral classroom management view play a large part in your class?
Did your instructor make an effort to meet the instructional needs of students from underrepresented groups?
Did your professor address contemporary cognitive, social, and cultural constructivists views of learning theory and teaching?
Did your professor cover humanism?
Would you describe yourself as a postmodernist?
Would you describe yourself as a feminist?
To what extent did the instructor use innovative teaching methods?

Design and Analysis

Research Design

As noted above, this study was designed as a cross-sectional correlational study in which a series of randomized pre- and post-assessments were made across institution/course characteristic categories, student characteristic categories, and instructor characteristic categories. The analytic paradigms are as follows:

Research Question One Paradigm:

Student Characteristics	Dependent Variables			
	Y1	Y2	Y3	Y4
X1a				
X1b				
X1c				
X1d				
X1e				
X1f				
X1g				
X1h				

Research Question Two Paradigm:

Instructor Characteristics	Dependent Variables			
	Y1	Y2	Y3	Y4
X2a				
X2b				
X2c				

Research Question Three Paradigm:

Course Characteristics	Dependent Variables			
	Y1	Y2	Y3	Y4
X3a				
X3b				
X3c				
X3d				
X3e				
X3f				
X3g				

Overall Analytic Paradigm (Research Questions Four and Five Paradigm):

	X1a			X1b			...	X1g
	X2a	X2b	X2c	X2a	X2b	X2c	...	X2c
X3a							...	
X3b							...	
X3c							...	
X3d							...	
X3e							...	
X3f							...	
X3g							...	
X3h								

Where the independent (predictor) variables include the following variables:

X1a-g: Institution/course characteristic categories:

a. Placement of educational psychology in the program
b. One- or two-semester sequence course
c. Amount of case study use
d. Class size
e. Amount of field experience required
f. Amount of reflective activities required
g. Main instructional method/practice used

X2a-c: Instructor characteristic categories

a. Experience teaching at the college level
b. Experience teaching at the K-12 level
c. Educational level

X3a-h: Student characteristic categories

a. Age
b. Gender
c. Ethnicity
d. Major
e. College attendance (full- or part-time)
f. Course attendance (primarily daytime or evening)
g. Level (undergraduate or graduate)
h. Previous degree(s)

The dependent measures (Y) include:

Y1: Student grades
Y2: Student performance on assessments of educational psychology knowledge
Y3: Student performance on the sequencing instruction exercise
Y4: Student self-reported tendency for diverse/alternative assessment use

Data Analyses

All of the variables targeted for study in this dissertation project were directly determined from the assessment instruments and/or course materials provided by the instructors. The exception to this arrangement was the variable regarding the main instructional method/practice used by the instructor in the course. This variable was

created from multiple sources of data and documented by a rater. A scaled (ordinal level) variable ranging from 0-5 was used to indicate the degree to which the course was taught with non-traditional (i.e., more contemporary constructivist) methods and focus. A zero would indicate a traditional (read, lecture, test, minimal application or social interaction) practice with the opposite being true for a score of five. Scores at the upper end of this scale would indicate a highly applied, interactive, and alternatively assessed course.

Two sources of information were used in the determination of this variable. As noted earlier, syllabi were available for all of courses in the study. Between the slightly varied institutional formats for syllabi, there were three areas of similarity noted among them. These areas included a course description, course objectives (or outcomes), and course activities and means of assessment. A rater carefully reviewed each course syllabus and assigned a score ranging from 0-2 for the syllabus component of this variable.

The second source of information for this variable was the content evaluation questions on the post-assessments, student interview responses, and the professor interview responses. This information was available in a more limited fashion compared to the course syllabi. These measures were available in some courses, but not in others (one, two, or three of these sources were available for 19 courses). The rater was asked to assign a score of 0-3 upon completion of their review. The two ratings were then summed and positioned on a total scale ranging from 0-5.

The first rater completed scalings on five courses. In order to establish inter-rater reliability, a second rater was asked to rate the same courses without knowing the ratings assigned by the first rater. Agreement between the two was found to be 85%. Fifteen

percent of the disagreements were between 0.5 and 0.25 in each case. Given these findings, reliability was deemed to be acceptable. The remaining 14 courses in which material was available to be reviewed were then rated. The total number of courses rated was 19.

A series of analysis of variance (ANOVA) procedures were used to test for differences related to the first four null hypotheses. Individual hypothesis tests were conducted using parametric one-way ANOVAs for comparisons where the ANOVA assumptions of normality and equal variances were met. In cases where the data failed to meet these assumptions, nonparametric Kruskal-Wallis ANOVA procedures were used. The Levene statistic for homogeneity of variance and sample cell sizes was used to make these decisions. A regression analysis procedure was used to test for any relationships among the variables targeted for study and noted in the fifth null hypothesis. Data analysis was conducted using the SPSS for Windows (SPSS, 1998) statistical program. The level of significance used in all analyses was $\alpha = .05$. Assessments were coded and entered by the principal investigator and the aforementioned graduate assistant.

CHAPTER IV

RESULTS

There were 36 sections (nine different courses) of educational psychology included in this dissertation study. Each section had between 7-33 students enrolled. There were 21 sections of undergraduate only courses and six graduate-only courses. Twenty-one of the courses were taught at a relatively small upper-division suburban public university, eight at a large urban public university, five at a medium sized urban private university, and two at a medium sized urban public university. Seventeen of the courses at the upper-division university were part of a two-course educational psychology sequence. Of these 17, eight were first semester courses and the remaining nine were second semester courses in a two-course sequence. All other courses were considered one-semester only courses. Five sections were "pre-assessment only" courses, eight sections were "post-assessment only" courses, and the remaining 23 were administered both the pre- and post-assessment instruments. Data collection was conducted over five semesters, from January of 1998 through December of 1999.

Demographic Summary of the Sample

Students

A total of 721 students completed assessments and interviews over the five semesters of data collection. The student sample was predominately white (85%) and female (82%). The students were overwhelmingly full-time (73%) undergraduate (78.5%)

elementary education majors (72%) and attended courses primarily in the daytime (70%). The ages of the students ranged from 18-53 with an average age of 27 years. Of the 721 students, the majority (62%) attended the upper-division institution. The ethnicities and majors of the sample are summarized in Tables 1 and 2.

Table 1

Frequency Table of Ethnic Backgrounds of Students

Ethnicity	Frequency	Percent
White	550	85
Black	53	8
Hispanic	22	3
American/Alaskan Native	3	1
Asian/Pacific Islander	12	2
Other	6	1
Total	646	100

Table 2

Frequency Table of Students' Majors

Major	Frequency	Percent
Elementary Education	463	72.0
Early Childhood Education	5	1.0
Special Education	2	0.5
Secondary Education	76	12.0
Other	94	14.5
Total	640	100.0

Faculty

There were three characteristics of faculty that were targeted for study. Instructor characteristics were obtained for 13 of the 20 instructors. The instructors had taught at the college level within a range between 0-30 years with an average of 6.7 years of college teaching experience. They ranged in K-12 experience from 0-32 years with an

average of nine years. Of the six possible categories originally targeted for study related to this variable (baccalaureate, masters, masters+, ABD, doctorate, and doctorate+), three were found to be present in the sample. Six of the instructors had completed doctorates or higher. Four of the instructors were ABD (all but dissertation). The remaining three had master's degrees plus advanced (usually some doctoral level coursework) training above the master's degree.

Institution/Courses

There were seven characteristics of interest related to the courses selected for study. Where the educational psychology course was placed in the teacher education program of study was the first characteristic. Placement of the course within the program had three possible levels: early; middle; or late. The majority of programs placed the course at the middle or later part of the program of study, with a very small percentage occurring early on. The frequencies for course placement are summarized in Table 3.

Table 3

Course Placement

Course Placement	Frequency	Percent
Early	63	9
Middle	325	45
Late	333	46
Total	721	100

The second course characteristic selected for study was the type of course offered. The review of literature revealed a concern about the amount of information to be covered in a typical one-semester course. Thus, a "course type" variable was created in order to be able to determine the types of courses offered and to investigate any possible

differences in student outcomes as a result of these course type differences. Three of the institutions offered various one-semester courses for a total of five one-semester undergraduate courses surveyed. The upper-division university offered a two-semester course. Both sections were surveyed at this institution. Graduate courses were surveyed at two of the institutions. They were both one-semester courses. The distribution of student participants across the course types is summarized in Table 4. The majority of students in the sample were in either the one semester undergraduate course or the second of two courses.

Table 4

Students in the Various Course Types

Course Type	Frequency	Percent
One course (Undergraduate)	248	34.5
Course 1 of 2	140	19.5
Course 2 of 2	233	32.0
One course (Graduate)	100	14.0
Total	721	100.0

The third course characteristic selected for study was related to the amount of case study use in the course. As a result of the analysis of course materials, this variable was scaled from "no case study use" to "heavy case study use." There were four possible categories with the heavy case study use category having the highest frequency (39%). Frequencies for case study use are summarized in Table 5.

Class size was the fourth course characteristic selected for study. Class size ranged from 7-88 with an average class size of 25 ($s = 9.55$). The amount of field and/or clinical experience required in the course was the fifth course characteristic. For this variable, an eight-point ordinal scale was created. The levels of this variable were as follows:

0 No field experience required
1 1-5 Hours: Observation only
2 1-5 Hours: Observation and report
3 6-10 Hours: Observation only
4 6-10 Hours: Observation and report
5 11+ Hours: Observation only
6 11+ Hours: Observation and report
7 Class held in a public school (i.e., Lab based course)

Only five categories were found to contain frequencies. There were no lab-based courses, courses requiring 6-10 hours of observation only, or courses requiring 11+ observation only. The majority of the courses (5 of 9) did not have a clinical requirement. For the courses requiring a clinical component, some instructors required a report or analysis of the experience and some did not. The distribution of students in these categories is summarized in Table 6.

Table 5

Case Study Use

Course Case Study Use	Frequency	Percent
No cases used	124	24
Light (1-2)	138	27
Medium (3-5)	54	10
Heavy (6+)	202	39
Total	518	100

The last two characteristics of interest for courses were the amount of reflective activity the students were expected to complete in the course and the main instructional method used by the instructor. As discussed in the method chapter, the method of instruction variable was a score created by a detailed content analysis and ratings of the course and interview materials. For the 12 instructors rated, the scores ranged from 1.5-3.75 (on a 5-point scale) with an average score of 3.15 (s = .59). The amount of

reflective activity included in a course was determined by the content analysis of the course materials. For this variable, a four-point ordinal scale was created. The scale ranged from "no reflective activities" being required to a "large amount" required. All four levels were found to be present in the courses surveyed. The amount of reflective activities in a course was found to be related to both the course ($\eta = .92$) and the instructor ($\eta = .83$). The majority of courses had a "light" amount (44%) of reflection required. The frequencies for reflections are presented in Table 7.

Table 6

Clinical Requirements

Clinical Requirement	Frequency	Percent
None	308	59.6
1-5 hrs ob only	25	4.8
1-5 hrs ob + report	29	5.6
6-10 hrs ob + report	71	13.7
11+ ob + report	84	16.2
Total	517	100.0

Table 7

Reflection Activity in the Courses Targeted for Study

Reflection Level	Frequency	Percent
None	29	6
Light (1-3)	230	44
Medium (4-6)	146	28
Heavy (7+)	113	22
Total	518	100

Hypothesis Tests

Hypothesis One

The first null hypothesis stated that there would be no significant differences in the outcome measures across student characteristic categories. The student characteristic

categories included age, gender, ethnicity, major, attendance (full- or part-time and daytime or evening), level (undergraduate or graduate), and whether the student participant had a previous degree. Each of these eight characteristics was compared with each of the four outcome measures: student grades (GRADE), educational psychology knowledge, sequencing instruction (SEQ), and tendency to use diverse assessments (AAUSE). Educational psychology knowledge was measured in one of three ways: pretest (PRE); posttest (POST); or both (DIFF). Each is reported below.

Age. Significant differences were found in educational psychology knowledge on the basis of student age in two areas: PRE, $F(35, 506) = 2.23$, $p < .0001$, and POST, $F(35, 351) = 1.564$, $p = .025$. Follow-up correlation analyses indicated that age was significantly and positively related to performance on these assessments ($p < .05$). However, age was also found to be significantly related to course placement, *rho* (635) = .466, $p = .0001$, and whether the student had a previous degree, *rho* (590) = .470, $p = .0001$. Older students were more likely to have had more educational psychology courses due to previous degrees and took the educational psychology course later in their program of studies. There was no significant difference found in knowledge gains (DIFF: the difference between PRE and POST) across the categories targeted for study. Age was not a factor in DIFF, GRADE, AAUSE, or SEQ. Given these findings, the null hypothesis was not rejected for age, except for the outcome measures related to the PRE and POST test.

Gender. There were significant differences found in educational psychology knowledge across genders. Posttest scores were found to be significantly higher for

females, $F(1, 400) = 10.652$, $p = .001$. There was also a significant difference found in knowledge gain (DIFF), $F(1, 292) = 5.031$, $p = .026$. Descriptive statistics for these two areas are presented in Table 8. Given these results, the null hypothesis was rejected for educational psychology knowledge across genders.

Table 8

Descriptive Statistics Related to Knowledge and Genders

Area	Gender	n	Mean	s
POST	Female	329	60	18.6
	Male	73	52	20.7
DIFF	Female	248	7	20.5
	Male	46	-0.3	19.4

Ethnicity. There were no significant differences found in any of the outcome measures on the basis of ethnicity. The null hypothesis was not rejected for ethnicity on any of the outcome measures.

Major. Due to small cell sizes for two of the majors (early childhood and special education), Kruskal-Wallis ANOVA procedures were used to test the hypothesis. Significant differences in educational psychology knowledge (PRE and POST) and student grades were found. Post-hoc comparisons using the Mann-Whitney U statistic were then conducted. For PRE, $\chi^2(4) = 11.32$, $p = .023$, the post-hoc comparisons revealed that there were significant differences between elementary and secondary majors (with elementary majors scoring higher) and secondary and the "other major" category (with secondary scoring higher). For POST, $\chi^2(4) = 10.88$, $p = .028$, the post-hoc comparisons yielded the same results. For student grades, $\chi^2(4) = 15.69$, $p = .003$, the post-hoc comparisons yielded the same results (elementary majors had better grades than

secondary majors and secondary majors had better grades than those in the other major category). The results related to grades should be interpreted with some caution. In the sample, there were only two "F" grades and no "D" grades. Given these findings, the null hypothesis was rejected across majors for the outcome measures of educational psychology knowledge and grades.

Attendance (Full- or Part-Time). There was a significant difference found in student grades on the basis of attendance, F (1, 290) = 3.981, p = .047. A comparison of the two groups (part-time and full-time) revealed that part-time students had the higher grades. The average grade for part-time students was 3.85 (s = 0.5) and the average grade for full-time students was 3.70 (s = 0.6). Given these findings, the null hypothesis was rejected for attendance and the outcome measure of grades. Of course, the previously mentioned caution regarding grades still applies.

Attendance (Daytime or Evening). There were no significant differences found in any of the outcome measures on the basis of whether the student attended courses primarily in the daytime or evening. The null hypothesis was clearly not rejected for any measure for this characteristic.

Level (Undergraduate or Graduate). There was a significant difference found in student grades on the basis of attendance, F (1, 299) = 5.486, p = .020. A comparison of the two groups (undergraduate and graduate) revealed that graduate students had the higher grades. The average grade for graduate students was 3.9 (s = 0.30) and the average grade for undergraduate students was 3.70 (s = 0.62). Given these findings, the

null hypothesis was rejected for level and the outcome measure of grades. Once again, the previously mentioned caution regarding grades still applies.

Previous Degree. Significant differences were found for two of the outcome measures on the basis of a previous degree. For student grades, there was a significant Levene statistic (i.e., the homogeneity of variance assumption was not met). Therefore, the Kruskal-Wallis ANOVA procedure was used to test the hypothesis. The ANOVA showed a significant difference in grades on the basis of previous degree, $\chi^2(3) = 11.16$, $p = .011$. Post-hoc comparisons using the Mann-Whitney U test showed that those differences were between no degree and BA (BA students had higher grades), and between AA and BA degrees (with BA students again having higher grades). The second outcome measure showing a significant difference on the basis of a previous degree was the tendency to use diverse assessments (AAUSE), $F(3, 336) = 3.377$, $p = .019$. Post-hoc pair-wise comparisons using the Tukey statistic revealed that the difference was between the AA and BA degree holders with those holding the associates degree having a higher tendency. The Tukey statistics are presented in Table 9. Given these findings, the null hypothesis was rejected for previous degree and the outcome measures of student grades and assessment use. The previously mentioned caution regarding grades still applies.

Hypothesis Two

The second null hypothesis was that there would not be significant differences in the outcome measures across instructor characteristic categories. The instructor characteristic categories were the instructor's experience teaching at the college level, the

instructor's experience at the K-12 level, and the instructor's educational level. Each characteristic was compared with each of the outcome measures.

Table 9

Tukey Statistics for Previous Degree and Assessment Use

Previous degree	A	B	C	D
A. No Degree	--	1.32	.97	.54
B. Associates		--	2.29*	1.86
C. Baccalaureate			--	.43
D. Masters				--

*p < .05

Experience at the College Level. Due to significant Levene statistics (i.e., the homogeneity of variance assumption was not met), Kruskal-Wallis ANOVAs were used in all calculations to test the hypothesis. Since the variables were considered to be ordinal, the follow-up comparisons utilized correlation coefficients (Spearman). Significant differences were found in five instances: pretest; posttest; knowledge gain; student grades; and assessment. No significant differences were found in the ability to sequence instruction. The ANOVAs and follow-up correlations are presented in Tables 10 and 11.

Table 10

Kruskal-Wallis Statistics for College Experience

Outcome Measure	Chi-Square	df	p-value
PRE	47.167	7	.0001*
POST	37.849	7	.0001*
DIFF	12.680	6	.0480*
SEQ	12.305	7	.0910
GRADE	85.616	4	.0001*
AAUSE	27.783	7	.0001*

*Significant at the .05 level.

There were significant correlations found for POST, DIFF, and GRADE. For POST and DIFF, the correlation was negative. This implies an inverse relationship between the variables. For these variables, students' performance on the posttest and knowledge gain would appear to decrease as the instructor's experience in higher education increased. The relationship was positive for GRADE. There were no significant correlations found for PRE or AAUSE. Although there appear to be significant differences in PRE and AAUSE on the basis of experience of the instructor, the relationship is not linear. It is important to note here that the sample size in terms of instructors' information was only 13. Thus, all of the results concerning instructor characteristics should be interpreted with extreme caution. Significant differences in student outcomes may be due to differences in one or two individual instructors, not necessarily the overall characteristic of interest. These findings will be discussed in the next chapter. Given these findings, the null hypothesis for instructor's experience in higher education was rejected (albeit with considerable caution) for all of the outcome measures except sequencing instruction.

Table 11

Correlations for College Experience

Outcome Measure	Rho	df	p-value
PRE	.013	418	.7970
POST	-.208	374	.0001*
DIFF	-.133	227	.0450*
SEQ	.026	312	.6450
GRADE	.310	326	.0001*
AAUSE	-.085	346	.1120

*Significant at the .05 level.

Experience at the K-12 Level. Due to significant Levene statistics and small cell sizes, Kruskal-Wallis ANOVAs were used in all calculations related to this characteristic.

Since the variables were considered to be ordinal, follow-up comparisons utilized correlation coefficients (Spearman). Significant differences were found in five areas: pretest; posttest; knowledge gain; student grades; and assessment. No significant differences were found in the ability to sequence instruction. The ANOVAs and follow-up correlations are presented in Tables 12 and 13.

Table 12

Kruskal-Wallis Statistics for K-12 Experience

Outcome Measure	Chi-Square	df	p-value
PRE	32.82	8	.0001*
POST	27.50	8	.0010*
DIFF	18.39	7	.0100*
SEQ	11.43	4	.1790
GRADE	39.15	4	.0001*
AAUSE	27.53	8	.0010*

*Significant at the .05 level.

Table 13

Correlations for K-12 Experience

Outcome Measure	rho	df	p-value
PRE	.124	409	.012*
POST	.113	374	.028*
DIFF	-.086	227	.195
SEQ	.064	312	.255
GRADE	.262	326	.0001*
AAUSE	.082	346	.125

*Significant at the .05 level.

There were significant correlations found for PRE, POST, and GRADE. There were no significant correlations found for DIFF or AAUSE. Although there appears to be significant differences in DIFF and AAUSE on the basis of experience of the instructor, the relationship is not linear. As was the case for the instructor's experience in higher

education, it is important to note once again that the sample size in terms of instructors was only 13. Thus, all of the results concerning instructor characteristics should be interpreted with a great deal of caution. Significant differences in student outcomes may be due to differences in one or two individual instructors, not necessarily the characteristics targeted for study. These findings will be discussed in the next chapter. Given these findings, the null hypothesis for instructor's experience in K-12 education was rejected (albeit with caution) for all of the outcome measures except sequencing instruction.

Instructor's Degree. A significant Levene statistic was found for GRADE. Therefore, a Kruskal-Wallis ANOVA was conducted to test this variable while the remaining variables were subjected to a traditional one-way analysis with Tukey as a post-hoc test procedures. A significant difference was found in student grades on the basis of instructor degree, χ^2 (2) = 39.11, p = .0001. Post-hoc comparisons using the Mann-Whitney U statistic indicated that there were significant differences between all three groups. The mean ranks are presented in Table 14. It would appear from this data that instructors with MA+ and doctorates gave higher grades than those who were ABD. However, it should be again noted that the sample size for instructors providing this information (degree) was only 13. Comparisons are actually for three instructors with MA+, four with ABD, and six with doctorates. These results should be interpreted with considerable caution. In addition, the previously mentioned caution regarding grades still applies.

The results of the one-way ANOVAs indicated significant differences in three other outcome measures. Significant differences were found in PRE, POST, and AAUSE. For PRE, $F(2, 417) = 3.505$, $p = .031$, the post-hoc comparisons indicated that the differences were between MA+/ABD, and MA+/doctorates. There was also a significant correlation found for this variable, *rho* $(418) = -.130$, $p = .008$. As the correlation was inverse, it would appear that instructors with more advanced degrees had students with less prior educational psychology knowledge. However, the instructor sample size may be an issue here. All of the instructors with MA+ were teaching the course that was the second of a two-course sequence. Students in this course would have recently completed the first course of the sequence and were more likely to score well on the pretest. As was the case for the prior two instructor characteristics, these results should all be interpreted with caution.

Table 14

Mean Ranks for Educational Level and Grades

Educational Level	n	Mean Rank for Grade
MA +	123	181.87
ABD	158	141.91
Doctorate	47	195.00

For POST, $F(2, 373) = 9.196$, $p = .0001$, the post-hoc comparisons indicated that the differences were between MA+/doctorates and ABD/doctorates. There was also a significant correlation for this variable, *rho* $(374) = -.213$, $p = .0001$. A review of the data indicates that instructors with MA+ had higher student posttest scores. The means for MA+, ABD, and doctorates were 67.22, 62.34, and 56.10 respectively. For AAUSE,

F (2, 345) = 8.321, p = .0001, the post-hoc comparisons indicated that the differences were between MA+/ABD and MA+/doctorates. There was also a significant correlation found for this variable, *rho* (346) = -.214, p = .0001. Instructors with more advanced degrees had students who were less likely to use diverse/alternative assessments. As before, these results should be interpreted with caution. The Tukey statistics for the three post-hoc comparisons are presented in Table 15. Given these findings, the null hypothesis was rejected (with caution) for the pre-test, posttest, student grades, and assessment use measures.

Table 15

Tukey Statistics for Instructor Degree with Pretest, Posttest, and Assessment Use

Area	Degree	MA+	ABD	DOC
Pretest	MA+	--	4.79*	5.71*
	ABD		--	.92
	DOC			--
Posttest	MA+	--	4.89	11.12*
	ABD		--	6.24*
	DOC			--
AAUSE	MA+	--	1.84*	2.43*
	ABD		--	.58
	DOC			--

*p < .05

Hypothesis Three

The third null hypothesis was that there were no significant differences in the outcome measures across institution/course characteristic categories. The institution/course characteristic categories were the placement position of the educational psychology course(s) within the program, one- or two-semester sequence course, amount

of case study use, class size, amount of field experience required, amount of reflective activities required, and the main instructional method/practice used. Each characteristic was compared with each of the outcome measures.

Placement of the Educational Psychology Course(s) Within the Program. There were three levels determined for this variable: early in the program; in the middle of the program; or late in the program. Significant differences were found for three outcome measures: pre-test; posttest; and student grades. The Levene statistic was significant for PRE and GRADE, so Kruskal-Wallis ANOVAs were calculated for them. The posttest met the homogeneity of variance assumption and a traditional one-way ANOVA with Tukey post-hoc comparisons was calculated. For POST, there was a significant difference found in scores on the basis of where the educational psychology course(s) was offered within the program, F (2, 456) = 15.826, p = .0001. A significant correlation for this variable, *rho* (457) = .238, p = .001, was supported by the Tukey calculations which yielded significant differences between early/later and middle/later. Students taking educational psychology later in their program appeared to perform better on the assessment of educational psychology knowledge. The Tukey statistics for POST are presented in Table 16.

Table 16

Tukey Statistics for Course Placement and Posttest

Course Place	Early	Middle	Late
Early	--	1.23	8.12*
Middle		--	9.35*
Late			--

*p < .05

Kruskal-Wallis ANOVAs were conducted for PRE and GRADE. There was a significant difference found in pretest scores on the basis of course placement, χ^2 (2) = 29.8, p = .0001. Post-hoc comparisons using the Mann Whitney U test indicated that the differences lay between early/later and middle/later with the higher scores being the later placement in both cases. This trend is supported by a significant correlation, *rho* (554) = .219, p = .0001. Students taking educational psychology in their program were more likely to be in an advanced course (second of two or a graduate course), thus more likely to perform at a higher level on the pretest.

For GRADE, the significant Kruskal-Wallis ANOVA results, χ^2 (2) = 18.2, p = .0001, confirmed a similar trend in post-hoc comparisons. Significant differences were found between early/middle and early/late course entry points. The trend was also supported by a significant correlation, *rho* (326) = .209, p = .0001. Students taking educational psychology later in their program had higher grades than their counterparts in the other categories. The previously mentioned caution regarding grades still applies. Given these findings, the null hypothesis for placement in the program was rejected for the outcome measures of PRE, POST, and GRADE.

One- or Two-Semester Sequence Course. There were five levels determined for this variable: one course (undergraduate only), one course (mixed undergraduate and graduate), first course of a two course sequence, second course of a two course sequence, and one course (graduate only). None of the courses surveyed fell under the one course (mixed) category. Comparisons were made for only four categories. A review of participants in those categories revealed that students in the one-semester courses were

more alike than students in the sequenced courses. As the intent of this variable was to investigate possible differences on the basis of whether the course is a one-semester course or part of a sequence (and not whether the course is undergraduate or graduate), the four categories were recoded into three categories: one-semester course types, first of a two-semester sequence, and second of a two-semester sequence. This three level variable was used in all subsequent analyses.

Significant differences were found for three outcome measures: pre-test; posttest; and assessment use. The Levene statistic was significant for PRE and AAUSE, so Kruskal-Wallis ANOVA values were calculated for them. The posttest met the homogeneity of variance assumption and a traditional one-way ANOVA with Tukey post-hoc comparisons was calculated. For POST, there was a significant difference in scores on the basis of course type, F (3, 456) = 54.81, p = .0001. A significant correlation for this variable, *rho* (457) = .418, p = .0001, was supported by the Tukey calculations that revealed significant differences between all of the groups. The Tukey values are found in Table 17.

Table 17

Tukey Statistics for Course Type and Posttest

Course Place	One Semester	First of Two	Second of Two
One Semester	--	10.21*	19.78*
First of Two		--	9.57*
Second of Two			--

*p < .05

For PRE and AAUSE, the results of the Kruskal-Wallis ANOVA tests indicated that there were significant differences. For the pre-test, the significant differences, χ^2 (2) =

42.84, p = .0001, between groups appeared to be linear. There was a significant correlation coefficient, *rho* (554) = .277, p = .0001. All of the groups showed significant differences in pairwise comparisons using the Mann Whitney U test. The significant difference in AAUSE, χ^2 (2) = 8.92, p = .012, was also found to be linear, *rho* (421) = .145, p = .003. The Mann Whitney U comparisons indicated that the significant difference was between the one semester course type and the second-of-two course type. In each case, the two-semester students were more likely to use diverse/alternative assessments, the second-of-two type significantly more so than the other two types. These differences can be seen if the means for each type are reviewed. The means for AAUSE by course type are presented in Table 18.

Table 18

Descriptives for AAUSE by Course Type

Course Type	n	Mean	Std. Deviation
One course	193	5.86	3.97
Course 1 of 2	88	6.97	5.10
Course 2 of 2	142	7.43	4.69

Amount of Case Study Use. The Levene statistic was found to be significant for GRADE, so the Kruskal-Wallis ANOVA procedure was used. One-way ANOVAs were used for the remainder of the comparisons. Significant differences were found in four areas on the basis of case study use. There was a significant difference in student grades on the basis of case use, χ^2 (3) = 18.89, p = .0001. Post-hoc comparisons indicated that these significant differences were between the medium case use group and each of the other three conditions. The mean grades for the no, light, medium, and heavy case use

groups were 3.9, 3.8, 3.5, and 3.8 respectively. The medium case use group had significantly lower grades than the others. Once again, the caution regarding grades still applies to these findings.

Three other outcome measures were found to be significantly different on the basis of case use. There was a significant difference found in pre-test performance, F (3, 389) = 7.119, p = .0001. Post-hoc comparisons revealed that the differences were between heavy case use and the others. Students in courses with heavy case use tended to perform better than their counterparts in other courses. This may be due to the fact that the heavier case use courses also tended to be the second-of-two courses or the graduate courses. Students in these sections would have been more likely to have had a previous educational psychology course, thus scoring higher on the pre-test. Educational psychology knowledge was also found to be significantly different for the posttest, F (3, 328) = 21.912, p = .0001. As was the case for the pre-test, post-hoc comparisons revealed that the differences were between heavy case use and the other levels of use. The Tukey statistics for all of the post-hoc comparisons are found in Table 19.

There was a significant difference found in assessment use on the basis of case use, F (3, 307) = 4.087, p = .007. Post-hoc comparisons revealed that the differences were between none/light and none/heavy. There was a significant linear relationship, *rho* (309) = .162, p = .004. Tukey statistics are found in Table 19. Given these findings, the null hypothesis for case use was rejected for PRE, POST, GRADE, and AAUSE.

Class Size. Class size for this sample ranged from 7-88 with a mean of 24.8 (s = 9.6). There were 22 different class sizes within this range. The presence of numerous

significant Levene statistics and some extremely small cell sizes made both the calculation of one-way ANOVAs and Kruskal-Wallis ANOVAs inappropriate for making meaningful comparisons across the outcome measures. Therefore, class size was regrouped into a three level ordinal variable. Small class size ranged from 0-22 and accounted for approximately 36% of the sample (n = 258). Medium class size ranged from 23-26 and accounted for approximately 30% (n = 216). Large class size ranged from 27-88 and accounted for the remaining 34% (n = 245). This recoded variable had adequate cell sizes and met the homogeneity of variance assumption for all but one variable (GRADE).

Table 19

Tukey Statistics for Case Use with Pretest, Posttest, and Assessment Use

Area	Case Use	None	Light	Medium	Heavy
Pretest	None	--	1.08	3.04	8.71*
	Light		--	4.12	7.64*
	Medium			--	11.78*
	Heavy				--
Posttest	None	--	5.83	.64	17.59*
	Light		--	6.46	11.77*
	Medium			--	18.23*
	Heavy				--
AAUSE	None	--	2.05*	1.65	2.45*
	Light		--	.39	.41
	Medium			--	.80
	Heavy				--

*$p < .05$

For the recoded variable, significant differences were found in three outcome measures on the basis of class size. The Kruskal-Wallis ANOVA for GRADE yielded a significant difference, χ^2 (2) = 20.36, p = .0001. Post-hoc comparisons using the Mann

Whitney U test showed that the differences lay between small/medium and medium/large classes. For small and medium classes, the smaller class size was associated with higher grades. For medium and large classes, the larger classes had higher grades. The means of grades by class size (small, medium, and large) were 3.89, 3.60, and 3.87 respectively. The previously mentioned caution regarding grades still applies.

The one-way ANOVA results yielded significant differences in the posttest scores, F (2, 455) = 14.38, p = .0001, and knowledge gain, F (2, 294) = 4.118, p = .017. For POST, the post-hoc comparisons revealed that the differences lay between the small/medium and medium/large classes. However, unlike the case for grade, the medium size classes had higher scores on the posttest. The same result was found for the post-hoc comparisons on the knowledge gain measure (DIFF). The students in the medium class had the greater gain. Tukey and descriptive statistics for POST and DIFF are found in Table 20. Given these findings, the null hypothesis for class size was rejected for POST, DIFF, and GRADE

Amount of Field Experience Required. As noted previously, only five of the eight levels of this variable were present in the sample. The five levels were compared against the outcome measures. Significant Levene statistics were found in two areas, PRE and GRADE, so Kruskal-Wallis ANOVAs were conducted to test the hypotheses for these areas. For PRE, there was a significant difference on the basis of clinical experience required in the course, χ^2 (4) = 11.86, p = .018. Post-hoc comparisons using the Mann Whitney U test revealed that the differences were between three pairs: none/1-5 observation only; none/11+ observation and report; and 1-5 observation only/6-10

observation and report. There was a significant inverse correlation between them, *rho* (390) = -.130, p = .010. A visual inspection of the data revealed that the majority of courses that did not require clinical experiences were the graduate and second semester courses. The majority of these students would have already had an educational psychology course and should have a higher score on the pre-test than the other students. A significant difference in the posttest score on the basis of field experiences was also found, $F(4, 326) = 3.75$, p = .028. A post-hoc comparison revealed that the differences were to be found between two pairs: none/1-5 observation only and none/11+ observation and report. As was the case for PRE, there was a significant inverse correlation found between these factors, *rho* (329) = -.123, p = .025. The same cautionary considerations recommended for the pretest results should apply here.

Table 20

Tukey and Descriptive Statistics for POST and DIFF by Class Size

Area		Small	Medium	Large	n	Mean	s
POST	Small	--	10.02*	.51	170	56.35	19.3
	Medium		--	10.52*	146	66.37	18.6
	Large			--	142	55.84	19.1
DIFF	Small	--	7.09*	.26	80	3.0	17.2
	Medium		--	6.84*	110	10.1	21.5
	Large			--	107	3.3	20.8

*p < .05

There was a significant difference in student grades on the basis of field experience, χ^2 (4) = 71.78, p = .0001. Post-hoc comparisons using the Mann Whitney U test showed that the differences were between the 1-5 hours of observation only condition and each of the other conditions. Students in courses requiring 1-5 hours of observation had lower

grades than the other students in the sample. The previously mentioned caution regarding grades still applies. Given these findings, the null hypothesis for clinical experience was rejected for the outcome measures of PRE, POST, and GRADE,

Amount of Reflective Activities Required. Reflective activities were coded on a four point ordinal scale. Significant differences were found in three outcome measures for this characteristic: PRE, POST, and AAUSE. For the pre-test, the significant differences, χ^2 (3) = 21.71, p = .0001, were found between the light/medium and light/heavy categories of reflective activities. A visual inspection of the data reveals that the small cell size and large variability for the "no reflective activity" category (10) may have contributed to the non-significant findings. The descriptive statistics for the categories are presented in Table 21. The means for none and light are almost the same, as are the means for medium and heavy. The majority of courses that did not require any or minimal reflective activities were the graduate and second semester courses. The majority of these students would have already had an educational psychology course and should have a higher score on the pre-test than the other students.

Table 21

Descriptive Statistics for Pretest and Posttest by Reflective Activities

	PRE			POST		
Reflection Level	n	Mean	s	n	Mean	s
None	10	59.85	27.65	25	55.96	20.17
Light	175	59.80	21.54	129	72.02	17.23
Medium	125	51.86	16.31	103	59.80	16.97
Heavy	83	50.17	17.00	75	56.86	18.12

Similar results were found for the posttest, except that the students in the "none" group were more comparable to the medium and heavy reflective level groups. Students in the light reflection category significantly outperformed all others on the posttest. The descriptive statistics are presented in Table 21. There was a significant difference found in POST on the basis of reflection, $F(3, 328) = 16.695$, $p = .0001$. The Tukey post-hoc statistics are summarized in Table 22.

Table 22

Tukey Statistics for Reflection Activities and the Posttest

Reflection Level	None	Light	Medium	Heavy
None	--	16.06*	3.84	.90
Light		--	12.21*	15.16*
Medium			--	2.94
Heavy				--

*$p < .05$

The final significant difference was related to the tendency to use alternative and diverse assessments, $F(3, 307) = 4.52$, $p = .004$. Post-hoc comparisons for this variable indicated that the significant differences were between none/light (Tukey = 3.76) and none/medium (Tukey = 3.03) reflective level groups. The means of AAUSE for the categories of none, light, medium, and heavy were 3.67, 7.43, 6.70, and 6.09 respectively. Students in the courses with no reflective activities showed significantly less of a tendency to use diverse/alternative assessments. It may be the case that reflection is related to assessment use, but further analysis (including experimental manipulations) would be required to substantiate this claim. Given these findings, the null hypothesis was rejected for PRE, POST, and AAUSE.

Main Instructional Method/Practice Used. Only 12 instructors provided enough information to be analyzed and rated for the method variable. Although their students could be coded for this variable (total n = 485), cell sizes were really based upon a sample of 12 instructors without enough variation to partition. Therefore, ANOVA was not considered to be appropriate in this situation. Cautious use of correlations is appropriate for preliminary identification of possible trends that may be supported by ANOVA when the database reaches a larger size. Since method is on the ordinal scale, Spearman correlation coefficients were used. There were significant correlations found between method and student grades and assessment use. The significant correlation between method and GRADE was found to be positive, *rho* (245) = .267, p = .0001. Faculties using more non-traditional methods were more likely to give higher grades. The significant correlation between method and AAUSE, *rho* (286) = .154, p = .009, was also positive. Faculty using more non-traditional methods had students who were more likely to use diverse/alternative assessments. Given these findings, the null hypothesis for method was rejected (with caution) for the outcome measures of GRADE and AAUSE.

Hypothesis Four

Hypotheses one through three required the systematic examination and testing of the main effects for the three clusters of characteristics: students; instructors; and institutions/courses. Hypothesis four required an investigation related to the documentation of any possible significant interactions among these variables. As noted in the previous sections, many of the predictor (independent) variables were significantly

correlated with each other. There were small cell sizes in some cases. The small cell sizes and many of the correlations seemed to fall in the instructor and institution/course characteristics categories. In order to answer the question regarding interactions, a number of two-way ANOVAs would need to be performed on the data. However, the small cell sizes and inter-correlations of the predictor variables in many cases resulted in a multicollinearity problem. Pedhazur (1997) defined collinearity as "the potential adverse effects of correlated independent variables on the estimation of regression [and ANOVA] statistics" (p. 294).

Two-way ANOVAs were obtainable for the outcome measures of posttest, student grades, and knowledge gain for most of the student characteristics: age; gender; major; previous degree; and status (undergraduate or graduate). Student characteristics were available for almost all of the 721 student participants and a small cell size was not an issue. However, no significant interactions were found. Given these indeterminate findings, the null hypothesis regarding significant interactions was not rejected.

Hypothesis Five

The final hypothesis called for an investigation of the relationships among the variables. In order to answer this question, a number of multiple regression analyses were conducted. One set of analyses included a test of the predictive ability for the outcome measures within each characteristic area (students, instructors, and course types). The second set of analyses included a test of the predictive ability for each outcome measure across the characteristic categories. Due to the presence of collinearity factors, the large numbers of predictors in some categories, and the fact that these were

unordered sets of predictors, each regression analysis followed a two-step sequence. First, all of the predictor variables were simultaneously loaded into the model (a forced entry procedure) for the outcome measures with the bivariate and partial correlations being requested. The bivariate correlations were then reviewed for significance with respect to documenting a relationship between the variable and the outcome measure. The corresponding partial correlation for that variable (the correlation between the predictor variable and the outcome controlling for all other predictors) was then reviewed to determine if it was substantial. Small partial correlations would indicate the presence of collinearity and the variable would be excluded from the next step. Only significantly correlated variables and/or those with substantial partial correlations were retained for the next step. The second step of the analysis required the insertion of each remaining variable as a block into the model hierarchically with order of insertion being from the higher correlations and partial correlations to the lesser. The ANOVA was then evaluated to determine if any predictors were significant and the extent to which there was a change in the R^2 value. Since this sample was non-experimental and included unequal cell sizes, the adjusted R^2 value (AD R^2) was also reported for each analysis. Of the total regressions completed (19), thirteen showed significant relationships (prediction equations) between/among the variables targeted for study. Given these findings, the null hypothesis was rejected.

Individual Characteristic Categories (First Set of Regressions). For this set of regressions, nine of 15 regressions yielded significant relationships between the predictor and criterion measures. Only the significant regressions are reported herein. For the

student characteristics category, two significant relationships were found as a result of the regression analyses. A significant prediction relationship was present for age and gender and the outcome measure of educational psychology knowledge (POST). The first step analysis indicated that age, gender, status (undergraduate or graduate), and previous degree all yielded significant correlations and two of these had substantial partial correlations. The bivariate and partial correlations for these variables and POST are presented in Table 23. The second step regression indicated that only age and gender made significant contributions to the regression equation. The regression equation with age was found to be significant, $R^2 = .051$, AD $R^2 = .049$, $F(1, 368) = 19.950$, $p = .0001$. The model with gender added was also found to be significant, $R^2 = .074$, AD $R^2 = .069$, $F(1, 367) = 14.580$, $p = .0001$. Status and previous degree did not make significant predictive contributions to the equation.

Table 23

Bivariate and Partial Correlations for Student Predictors, POST, and GRADE

Area	Predictor	Bivariate Correlation	Partial Correlation
POST	Age	.233***	.208
	Gender	-.139**	-.132
	Status	-.094*	-.046
	Previous Degree	.148**	.090
GRADE	Age	.227***	.187
	Ethnicity	-.114*	-.105
	Attend (FT V PT)	.127*	-.024
	Status	-.125*	.003
	Previous Degree	.158**	.067
	Attend (Day V Eve)	.127*	.038

*p < .05, **p < .01, ***p < .001

A significant predictive relationship was present for age and the student grades (GRADE) outcome measure. The first step analysis indicated that age, ethnicity, attendance (full- or part-time), status (undergraduate or graduate), previous degree, and attendance (daytime or evening) all yielded significant correlations and two of these yielded substantial partial correlations. The bivariate and partial correlations for these variables and GRADE are presented in Table 23. The results of the second step regression indicated that, although each equation was found to be significant, only age made a significant change in the value of *F*. The regression equation with age was found to be significant, $R^2 = .052$, AD $R^2 = .048$, $F(1, 267) = 14.586$, $p = .0001$. The change statistics for these predictors are presented in Table 24. Remember that the caution regarding conclusions for the grade variable is still in effect.

For the instructor characteristics category, four significant relationships were found as a result of the regression analyses. A significant predictive relationship was found for the instructor's degree and the outcome measure of educational psychology knowledge (POST). The first step analysis indicated that instructor's degree, K-12 experience, and higher education experience all had significant correlations and one had substantial partial correlations. The bivariate and partial correlations for these variables and POST are presented in Table 25. The results of the second step regression indicated that only the instructor's degree made a significant contribution to the regression equation. The regression equation with degree was found to be significant, $R^2 = .047$, AD $R^2 = .044$, $F(1, 374) = 18.312$, $p = .0001$. Public school (K-12) and higher education experience did not make significant contributions to the regression equation.

A significant predictive relationship was found for the instructor's higher education experience and student knowledge gain (DIFF). The first step analysis indicated that only the instructor's higher education experience yielded a significant correlation (-.152) and substantial partial correlation (-.157) with DIFF. Even though all three were entered into the second step regression, only the instructor's higher education experience made a significant contribution to the regression equation. The regression equation with higher education experience was found to be significant, $R^2 = .026$, AD $R^2 = .019$, $F(1, 227) = 5.385$, $p = .021$. The instructor's degree or K-12 experience did not appear to make significant contributions to the equation.

Table 24

Change Statistics for GRADE and Student Predictors

Model	R	R Square	Adjusted R Square	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
1	.228	.052	.048	.052	14.586	1	267	.000
2	.252	.064	.057	.012	3.362	1	266	.068
3	.266	.071	.060	.007	2.025	1	265	.156
4	.267	.071	.057	.001	.165	1	264	.685
5	.269	.072	.055	.001	.255	1	263	.614
6	.269	.072	.051	.000	.016	1	262	.900

1 Predictors: AGE
2 Predictors: AGE, ethnicity
3 Predictors: AGE, ethnicity, previous degree?
4 Predictors: AGE, ethnicity, previous degree?, DAYEVE
5 Predictors: AGE, ethnicity, previous degree?, DAYEVE, attendance
6 Predictors: AGE, ethnicity, previous degree?, DAYEVE, attendance, status

A significant predictive relationship was present for the instructor's degree and the outcome measure of diverse assessment use (AAUSE). The first step analysis indicated that only the instructor's degree yielded a significant correlation (-.204) and a substantial

partial correlation (-.179). Even though all three were entered into the second step regression, only the instructor's degree made a significant contribution to the regression equation. The regression equation with degree was found to be significant, R^2 = .042, AD R^2 = .039, F (1, 346) = 15.002, p = .0001. Public school (K-12) and higher education experience did not make significant contributions to the regression equation.

Table 25

Bivariate and Partial Correlations for Instructor Predictors and POST

Predictor	Bivariate Correlation	Partial Correlation
Instructor Degree	.216***	-.156
K-12 Experience	.113*	.080
Higher Education Experience	-.147**	-.084

*p < .05, **p < .01, ***p < .001

A significant predictive relationship was present for the instructor's K-12 and higher education experiences and the student grade outcome measure. Cautions regarding the grade variable are still in effect. The first step analysis indicated that the instructor's K-12 experience and higher education experience both yielded significant correlations and substantial partial correlations. The bivariate and partial correlations for these variables and GRADE are presented in Table 26. The second step regression indicated that both made significant contributions to the equation. The regression equation with higher education was found to be significant, R^2 = .125, AD R^2 = .122, F (1, 326) = 48.587, p = .0001. The model with K-12 experience added was also found to be significant, R^2 = .180, AD R^2 = .175, F (2, 325) = 35.673, p = .0001. The instructor's degree did not make a significant contribution to the regression equation.

Table 26

Bivariate and Partial Correlations for Instructor Predictors and GRADE

Predictor	Bivariate Correlation	Partial Correlation
Instructor Degree	-.056	-.044
K-12 Experience	.262***	.233
Higher Education Experience	.354***	.349

*p < .05, **p < .01, ***p < .001

For the institution/course characteristics category, three significant relationships were found as a result of the regression analyses. A significant predictive relationship was present for course type (how many semesters) and the outcome measure of educational psychology knowledge (POST). The first step analysis indicated that course placement (earlier or later), case study use, field experiences, reflection activities, class size, and course type all yielded significant correlations, and three yielded substantial partial correlations. The bivariate and partial correlations for these variables and POST are presented in Table 27. The results of the second step regression indicated that only course type made a significant contribution to the regression equation. The regression equation with course type was found to be significant, $R^2 = .156$, AD $R^2 = .154$, $F(1, 328) = 60.791$, $p = .0001$. The other inserted variables did not make significant contributions to the regression equation.

A significant predictive relationship was present for the main instructional method and case study use and the outcome measure of diverse assessment use (AAUSE). The first step analysis indicated that case study use, class size, method, and course type all had significant correlations and two yielded substantial partial correlations. The bivariate and partial correlations for these variables and AAUSE are presented in Table 28. The

results of the second step regression indicated that only method and case use made significant contributions to the equation. The regression equation with method was found to be significant, $R^2 = .023$, AD $R^2 = .019$, $F(1, 248) = 5.87$, $p = .016$. The regression equation with case use added was also found to be significant, $R^2 = .054$, AD $R^2 = .046$, $F(2, 247) = 6.99$, $p = .001$. Although the equation with class size inserted was found to be significant, $F(3, 246) = 5.061$, $p = .002$, class size did not make a significant change in the R^2 value or the value of F. The other variable, type of course, did not make a significant contribution to the regression equation.

Table 27

Bivariate and Partial Correlations for Course Predictors and POST

Predictor	Bivariate Correlation	Partial Correlation
Course Placement	.190***	-.133
Case Study Use	.410***	.035
Field Experiences	-.181***	-.138
Reflection Activities	-.243***	-.014
Class Size	.179**	-.086
Type of Course	.433***	.166

*p < .05, **p < .01, ***p < .001

Table 28

Bivariate and Partial Correlations for Course Predictors and AAUSE

Predictor	Bivariate Correlation	Partial Correlation
Case Study Use	.214***	.090
Method	.151**	.111
Class Size	.132*	-.086
Type of Course	.198***	-.027

*p < .05, **p < .01, ***p < .001

A significant predictive relationship was present for main instructional method and course type and the outcome measure of student grade (GRADE). The results of the first

step analysis indicated that method, type of course, course place, and class size yielded significant correlations or substantial partial correlations. The bivariate and partial correlations for these variables and GRADE are presented in Table 29. The results of the second step regression indicated that only method made a significant contribution to the regression equation. The regression equation with method was found to be significant, R^2 = .074, AD R^2 = .071, F (1, 245) = 19.703, p = .0001. Although all of the variables yielded significant results, only method made a significant change in the values of F. Of course, the caution regarding the outcomes associated with grades still applies.

Table 29

Bivariate and Partial Correlations for Course Predictors and GRADE

Predictor	Bivariate Correlation	Partial Correlation
Course Place	-.036	-.066
Method	.273***	.250
Class Size	-.016	-.062
Type of Course	-.122*	.024

*p < .05, **p < .01, ***p < .001

Across Characteristic Categories (Second Set of Regressions). For this set of regressions, all four regressions yielded significant relationships in terms of a set of predictors. The first regression included the outcome measure of educational psychology knowledge (POST) across all of the predictor variables. The results of the first step regression indicated that eleven predictors had significant correlations with POST and nine of these had fairly substantial partial correlations. The bivariate and partial correlations for these variables are presented in Table 30. All were inserted into the second step regression analysis. The regression equation with type of course was found to be significant, R^2 = .127, AD R^2 = .124, F (1, 248) = 36.145, p = .0001. The equation

with the instructor's degree added was also found to be significant, $R^2 = .143$, AD $R^2 = .136$, $F(2, 247) = 20.633$, $p = .0001$. The addition of the instructor's degree made a significant change in the value of F ($p = .033$). No other variable made a significant contribution to the regression equation.

Table 30

Bivariate and Partial Correlations for Predictors and POST

Predictor	Bivariate Correlation	Partial Correlation
Course Place	.174*	-.166
Case Study Use	.367***	-.017
Field Experiences	-.020*	-.195
Reflection Activities	-.226**	.055
Class Size	.225**	-.089
Type of Course	.392***	.173
Age	.126*	.117
Ethnicity	-.189*	-.121
Attendance (daytime or evening)	-.163*	-.149
Instructor's Degree	-.189**	.054
Instructor's Higher Ed. Experience	-.185**	.079

*p < .05, **p < .01, ***p < .001

The second regression included the outcome measure of knowledge gain (DIFF) across all of the predictor variables. The first step regression indicated that three predictors yielded significant correlations with DIFF and seven yielded fairly substantial partial correlations. The bivariate and partial correlations for these variables are presented in Table 31. All were inserted into the second step regression. Only the regression equation with the instructor's experience in higher education was found to be significant, $R^2 = .024$, AD $R^2 = .020$, $F(1, 226) = 5.523$, $p = .020$. No other variable made a significant contribution to the regression equation.

The third regression included the outcome measure of tendency to use diverse assessments (AAUSE) across all of the predictor variables. The first step regression indicated that nine predictors yielded significant correlations with AAUSE and six yielded fairly substantial partial correlations. The bivariate and partial correlations for these variables are presented in Table 32. All were inserted into the second step regression. Although there were a number of significant equations, only the instructor's degree made a significant change in the value of F ($p = .001$). The equation for the instructor's degree was found to be significant, $R^2 = .059$, AD $R^2 = .053$, $F(1, 173) = 10.778$, $p = .001$. No other variable made a significant contribution to the regression equation.

Table 31

Bivariate and Partial Correlations for Predictors and DIFF

Predictor	Bivariate Correlation	Partial Correlation
Ethnicity	-.162*	-.240
Major	-.145*	-.176
Instructor's Degree	.157*	.089
Previous Degree	.003	.141
Course Placement	-.112	-.158
Field Experiences	.007	-.146
Instructor's Higher Ed. Experience	-.114	-.137

*p < .05, **p < .01, ***p < .001

The final regression analysis included the outcome measure of student grades (GRADE) across all of the predictor variables. The caution regarding grades still remains. The first step regression indicated that six predictors showed significant correlations with GRADE and three showed fairly substantial partial correlations. The bivariate and partial correlations for these variables are presented in Table 33. All were

inserted into the second step regression. Although all of the variables resulted in significant equations, only the method of instruction and the instructor's K-12 experience made significant changes in the values of F ($p = .0001$ and $p = .012$ respectively). The equation for method was found to be significant, $R^2 = .078$, AD $R^2 = .073$, $F(1, 205) = 17.274$, $p = .0001$. The addition of the instructor's K-12 experience to the equation yielded a significant change in the value of F and a significant equation, $R^2 = .106$, AD $R^2 = .097$, $F(2, 204) = 12.081$, $p = .0001$.

Table 32

Bivariate and Partial Correlations for Predictors and AAUSE

Predictor	Bivariate Correlation	Partial Correlation
Major	-.151*	-.064
Status (Undergraduate or Graduate)	.147*	-.084
Previous Degree	-.175*	-.102
Attendance (daytime or evening)	-.167*	-.074
Method	.176*	.053
Case Study Use	.208**	.101
Instructor's Degree	-.220**	-.034
Class Size	.138*	.086
Course Type	.187**	.089

*p < .05, **p < .01, ***p < .001

Table 33

Bivariate and Partial Correlations for Predictors and GRADE

Predictor	Bivariate Correlation	Partial Correlation
Age	.134*	.057
Attendance (daytime or evening	.156*	.123
Method	.283***	.051
Instructor's K-12 Experience	.229***	-.066
Instructor's Higher Ed. Experience	.163**	.119
Course Type	-.121*	.054
Course Placement	-.045	-.084

*p < .05, **p < .01, ***p < .001

CHAPTER V

DISCUSSION

This effort and the larger efforts of the Teaching Educational Psychology Research Team came about in response to the call of the Anderson et al. (1995) group for research and development regarding the teaching of educational psychology. This dissertation study was designed to investigate the teaching of educational psychology in teacher education programs of study. Student, instructor, and institution/course characteristic categories were targeted for special study. The research questions in this correlational study were crafted to focus on documenting if there were significant differences in any of the outcome measures on the basis of variables in these categories, significant interactions among these variables, and whether significant inter-relationships (prediction equations) existed in the data set. Five null hypotheses were tested. In this chapter, the findings related to each null hypothesis will be discussed and the associations to the existing literature will be presented as well.

One of the major conclusions of the literature review was that, although there was a need for investigation into the factors associated with teaching educational psychology and their possible relationship to the outcomes, descriptive research regarding the teaching of educational psychology was also an area of limited study. Many authors' descriptions of the variety of contexts in which educational psychology is taught, how it is taught, and who teaches it have been based upon a limited number of studies. Rocklin

(1996) stated, "No census of educational psychology instructors exists" (p. 38). Therefore, was decided that is might be beneficial to further describe the population and contexts related to teaching educational psychology with regard to the present sample prior to addressing the findings related to the individual research questions targeted for systematic study.

The Teaching of Educational Psychology in this Sample

The students in this sample were fairly traditional in terms of the "typical" teacher education student except for two characteristics. This sample included predominately white, female, full-time, undergraduate elementary education students. Minorities in higher education have tended to hover around the four percent range. The percentage of minorities in this sample was 15%. Whether this discrepancy was due to the general nature of the universities in the study having better minority recruitment and/or retention strategies, a change in trends, or sampling error cannot be determined. However, it does pose an interesting and possibly promising area for future and current research. In addition, this sample had a higher than usual percentage of undergraduates who already held a degree (both associate and bachelor degrees). Whether this was due to the inclusion of an upper-division university in the sample or a burgeoning trend of persons attempting to fill teacher shortages remains to be seen.

In terms of the instructors included in this study, there was some diversity even though the sample was small. Faculty in this sample averaged seven years of teaching experience in higher education. The majority of faculty held completed doctorates or were ABD students. However, of this total, only about one-half of the faculty held

degrees in educational psychology. The remainders of the faculty degrees were earned in related fields (some with educational psychology as a minor) such as curriculum and instruction. This situation seems to contradict one citation in the literature review (Anderson et al., 1996) in which it was inferred that the majority of educational psychology courses were taught by graduate assistants or new professors. However, one might assume that the majority of courses taught by graduate assistants would be housed in universities with doctoral programs in the field. In this sample, only two of the universities had such a program and graduate or teaching assistants did teach some of the courses. Certainly, the results of this study cannot answer with any degree of certainty the question as to whom is teaching educational psychology. Further investigation would be necessary to ascertain if what was found here would be present in a larger and more representative sample.

The institutions participating in this study were diverse in terms of how educational psychology was offered within their programs of study. One question raised in the literature review was when educational psychology should be taken. Hoy (1996) stated that if taken too early the course might be too theoretical, and if taken too late might mean that the students would probably not give enough attention to the course. The majority of educational psychology courses in this study were placed in the middle to later categories within their respective programs of study. As found in the results section, students taking educational psychology later in their program had higher scores on the test of educational psychology knowledge. However, this finding may be confounded by the fact that these "later" course students also tended to be older (an perhaps more

mature) and possibly in their second course of educational psychology. The diversity of educational psychology course offerings would need to be expanded in a future sample in order to make more definitive statements about when the educational psychology course should be offered in teacher education programs of study.

The majority of institutions in this study offered the one-semester type of educational psychology course. Only the upper-division university offered a two-semester sequence course. Although the majority of the outcomes were more positive for this type of course, the small sample size would make definitive recommendations for practice questionable at best. However, anecdotal comments from every faculty member participating in this study, all of whom were educational psychology instructors, indicated an overwhelming preference for teaching educational psychology over two semesters, as opposed a one-time only experience. The comments from instructors included: "There is just too much content to do justice to in one term. I end up leaving out so many important things," and "I would love to have the time for more depth instead of feeling like I have to hurry up and get to Chapter 15 by April 15th."

Almost 75% of the courses included in this study used case studies in some way during the term. In the introduction for this study, support for investigation into the use of cases was noted (Rocklin, 1996). Although the results of this study showed a positive relationship between the use of cases, educational psychology knowledge, and a tendency to use diverse assessments, the type of cases used by the instructors was not investigated, nor was how the cases were used within the context of the instructional process. In addition, the heavier case use classes in this study took place later in the program and/or

in the second course of a two-semester sequence. Additional investigation in this area is certainly warranted before the factors can be better delineated and any causal inferences can be made about scope and sequence.

Finally, the educational psychology courses included in this study provided support for the conclusion drawn in the review of literature; that many educational psychology courses do not include a field component. The majority of courses included in this sample did not have a field experience component. In the literature review, it was noted that most authors seemed to support the use of field experiences, cases, and reflection activities, but that the research supporting this contention had been fairly inconclusive or conflicting in nature. Although there were fairly positive results in this study related to all three areas of investigation, thus supporting the primary contention, a recommendation for additional study with more diversity in usage and further investigation into lasting effects (i.e., after the candidate had been teaching) is warranted.

Conclusions Regarding the Research Questions

The first hypothesis was crafted to focus upon differences in the outcome measures across student characteristic categories. The student characteristic categories were age, gender, ethnicity, major, attendance (full or part time and daytime or evening), level (undergraduate or graduate), and whether the student participant had a previous degree. Each of these eight characteristics was compared with each of the four outcome measures: student grades (GRADE); educational psychology knowledge (PRE, POST and DIFF); sequencing instruction (SEQ); and tendency to use diverse assessments (AAUSE). There were significant differences in two of the outcome areas on the basis of

some of these characteristics. Significant differences in educational psychology knowledge (POST) were found on the basis of age, gender, and major. The direction of difference in terms of age was linear. Older students tended to perform better on the outcome measures. Females in this sample outperformed their male counterparts. However, it should be noted that the females in this sample significantly outnumbered the males. There were almost four times as many females as there were males in the data set. The same caution should apply to the conclusion regarding the performances by major. Elementary majors outperformed secondary majors who outperformed the other majors (including many graduate students). However, the frequencies in these categories were very uneven. There were significantly more elementary majors (72% of the sample) than any other category. It is recommended that the inequalities within the groups (genders and majors) be carefully controlled for if additional studies are attempted on this topic.

The second outcome that yielded significant differences was student grades (GRADE). There were significant differences found in grades on the basis of major, attendance (full-time or part-time), and status (undergraduate or graduate). The relationship between major and GRADE was the same as for major and POST. Elementary majors had higher grades than secondary and so forth. Part-time students had higher grades than full-time students. Graduate students had higher grades than undergraduate students. However, the same caution about unequal comparison groups remains. In addition, there is an even larger caution regarding any interpretations for student grades.

For this sample, the distribution of grades had a strong negative skew (-3.348). There were only two grades of "F", no "D" grades, and only eight grades of "C" in the data set. The frequency table for grades is presented in Table 34. As presented in this distribution, 81% of the grades were "A's". The outcome measure of grades did not have enough variability to allow the researcher to make very definitive conclusions regarding how this outcome varied along any predictor characteristics. The very few students who did not perform well would have had a drastic effect on comparisons. For example, significant differences in grades on the basis of attendance and status were found. Undergraduates in the sample received the two "F" grades and the eight "C" grades. Full-time students received all of the eight "C" grades. If the grades for these students were eliminated from the data set, the significant differences would vanish. However, there was not enough variability left to make even those comparisons adequate (practically significant).

Table 34

Frequency Table of Student Grades

Grade	Frequency	Percent
F	2	1
D	0	0
C	8	2
C+/B-	5	2
B	36	11
A-/B+	10	3
A	267	81
Total Grades	328	100

The other consideration regarding grades was the large number of high grades, particularly "A's". It is imperative that readers not draw a conclusion that the

phenomenon referred to as "grade inflation" was present in the study. Students had to give permission for their grade to be released for the data set and their instructor had to provide them as requested. As noted on Table 34, only 328 of the 721 possible grades were received from the instructors. It could be the case that many of the students with lower grades did not give the release and/or that instructors with lower student grades did not provide them. This question is not answerable for these possible circumstances. Regardless of the reasons, the distribution of student grades made the statistical and practical significance of any result regarding these grades questionable.

The second hypothesis focused upon differences in the outcome measures across instructor characteristic categories. The instructor characteristic categories were experience teaching at the college level, experience teaching at the K-12 level, and degree attainment. Each of these eight characteristics was compared with each of the four outcome measures. There were significant differences found in three outcome areas on the basis of these characteristics.

Significant differences in educational psychology knowledge (POST) were found on the basis of experience teaching at the college level, experience teaching at the K-12 level, and educational level (instructor degree). In addition, there were significant differences found in knowledge gain (DIFF) on the basis of the instructor's experience teaching at the college level and experience teaching at the K-12 level. For most, the relationships appeared fairly linear, although the direction of the relationship differed on some dimensions. For POST and experience teaching at the college level, the relationship was inverse. This inverse relationship was also found to be associated with

the instructor's degree. The more experienced professors in this study (and those with the more advanced degrees) had students with less educational psychology knowledge at the end of the course. However, before making a conclusion that the more experienced and higher degreed professors did not do as well at imparting basic educational psychology content to their students, five factors need be taken into consideration. First, this was a correlational study, not an experimental one that might be justified in making more definitive causal statements. Second, the professors in this study with more college level experience and advanced degrees were also those who tended to be teaching at the graduate level in more highly applied types of courses. The content of these courses was perhaps "beyond" the basic content sampled on the assessment instrument. The students just completing this basic content, those with the less experienced professors and more "basic" courses, should (and did) perform better on the posttest. This conclusion is borne out by the fact that students in the courses with the more experienced professors (the more advanced courses) did significantly better on the pretest than the other students (who were just starting on this content). Third, "instructor degree" is a variable that accounts for the actual level of education of the instructor. It is not an indication of advanced degrees in educational psychology. A visual inspection of the instructor data reveals that only about one-half of the instructors held degrees (ABD or PH.D) in educational psychology. The remainders of the instructors' degrees were in curriculum and instruction or a related area. If the means for POST are recalculated along the lines of training in educational psychology, the students with instructors having advanced training in educational psychology averaged better on POST (mean = 63.1) than those

who had an instructor without the training (mean = 58.6). Fourth, the differential sample sizes with regard to each of the instructors needs to be taken into consideration. Although there were 36 sections of educational psychology in this data set and 721 students, information about all of the instructor characteristics was available for only 13 instructors. Therefore, conclusions about instructors can only be based on the limited diversity found among these 13. This was one of the reasons that some of the quantitative analyses were not completed as originally planned. Finally, the assumption of what content is covered in a "basic" educational psychology course may be in and of itself at issue. As revealed in the review of literature, there is clearly not consensus as to exactly what the content is (or should be) in a typical educational psychology course. The assessment instrument used to measure educational psychology knowledge in this investigation was based upon the researcher's review of texts and state standards. It is recognized that it may not be well matched with what other instructors deem to be necessary content for a course. The "what " issue is a long-standing one in the curriculum field. Given these factors, any conclusions made about the instructor characteristics cluster of variables targeted for study need be done with considerable caution.

This caution especially applies in the case of the outcome measure of change in educational psychology knowledge (DIFF). The significant differences in DIFF for the characteristics of experience teaching at the college level and experience teaching at the K-12 level were also found to be inverse. This outcome measure was computed as the difference between the posttest and the pretest scores. There were only 23 sections in

which both assessments were administered. Of these 23, ten had instructor information available. Therefore, the sample size would be ten, not even thirteen. The results indicated that professors with more higher education and K-12 experience seemed to have students who did not gain (and even lost) content knowledge are even more highly suspect given that the differences in what professors with those experiences tended to be teaching would further distribute and make the cell frequencies even smaller. It is apparent, in this case especially, that the differences in the outcome measures may be attributed to differences on the basis of individual instructors as opposed to differences due to the characteristics targeted for systematic study.

The relationship between POST and K-12 experience was also linear, but the direction in this case was positive. However, the reverse of the previous argument applies here. Instructors in this study who had a large amount of public school experience also tended to be the instructors for those less advanced courses (the ones that covered more "basic" content). One might assume (and hope) that because they had just covered the material, that their students would do better on the posttest. They did. However, the caution related to sample size must still apply to this finding. Certainly, future researchers should attempt to increase the diversity of the data set in terms of instructor characteristics.

The second outcome measure for which significant differences were found was in the students' tendency to use diverse assessment (AAUSE). Significant differences in (AAUSE) were found on the basis of experience teaching at the college level, experience teaching at the K-12 level, and educational level. It should be noted that the relationship

for the two experience characteristics was not linear. The post-hoc comparisons for these characteristics would support a conclusion that the differences were due to individual instructors and not the characteristic of interest. The differences on the basis of instructor degree, however, were linear. In addition, this relationship held even in the regression analyses. Instructor degree was the only variable that remained (out of all the predictor variables) as a significant contributor to the regression equation. The relationship was inverse. It would appear on the surface that instructor's with more advanced degrees tended to have students who were less likely to use diverse and alternative assessment measures. If instructor degree is dissected for educational psychology training, as was done for POST and degree, the relationship does not change. The average AAUSE for students with instructors having advanced educational psychology degrees was 5.45 and those without was higher at 6.77. However, the cautions stated above still apply. Even though the relationship seemed to hold in multiple analyses, it does not change the sample size and cell frequency issue. For example, there might have been one instructor without an advanced degree or training in educational psychology whom, because of personal feelings on the subject of assessment, really stressed the value of alternative assessments and diversity in assessment use. The responses of the students from this one course could contribute to skewing the distribution enough to yield a significant relationship between the variables. Again, any interpretation regarding instructor characteristics must be made with the understanding that differences could be due to individual instructors instead of the characteristic of interest.

As was noted in the review of literature, who teaches educational psychology is one of the least investigated areas in the discipline. This study was designed to investigate three characteristics of instructors. However, due to the small sample size, the findings are questionable. Research with a larger and more diverse data set with regard to faculty is needed to determine if other investigators would corroborate the results from this study.

The third hypothesis focused upon differences in outcome measures across institution/course characteristic categories. The institution/course characteristics were placement of educational psychology in a program, one- or two-semester sequence course type, amount of case study use, class size, amount of field experience required, amount of reflective activities required, and the main instructional method/practice used in the course. In terms of sample size effects, the cautions regarding these characteristics would fall between those noted for the instructor and student characteristic categories. There was more information available for the 36 courses in the data set than was available for the 20 instructors but not as much as for the 721 students. Available course information by section on these characteristics ranged from all 36 having information such as course placement and course type to only 23-27 sections having available data for characteristics such as method, clinical base, and reflective activities. Thus, the cautions for cell size are not as strong for these characteristics as they are for the instructor characteristics

Significant differences in three of the outcome measures were found for some of the course characteristics. For educational psychology knowledge (POST), there were significant differences found on the basis of course placement, course type, case use,

class size, field experiences, and reflection activities. For course placement (when the student takes educational psychology in the program of study), students taking educational psychology later in their program outperformed who took it earlier. One conclusion to be reached is that educational psychology might not be as valuable a course for lower classmen. As only three of the institutions in this data set had lower classmen, this conclusion should be viewed as tentative at best.

Course type was also a characteristic for which there were significant differences in POST. For the three course types included this study (one course only, one-of-two course, and second-of-two course), there was a strong linear relationship found with educational psychology knowledge. This relationship also held throughout the regression analyses. Course type was the one course characteristic that remained in the model (along with instructor degree) for POST prediction. Students in the second of two courses outperformed those in the first of two and those of the one course only type. In the introduction and review of literature, there were a number of authors noted (e.g., Anderson et al., 1996; Shuell, 1996) who questioned the amount of content to be covered in one semester of educational psychology. The results of this study, although somewhat questionable due to sample size, seem to support the suppositions in the literature. There appear to be more favorable outcomes in sequenced courses.

There were significant differences found in POST on the basis of case use with the heavier case students having the higher scores on this instrument. As stated earlier in this discussion, the heavier case use classes in this study were all later in the program and/or the second of a two-semester sequence. Due to the small sample size, there was not

enough variability to determine the exact covariance between these three variables. Additional investigation in this area is certainly warranted before the factors can be better delineated and causal inferences made about the outcome measures.

For class size, a similar question about covariance can be raised. The medium sized course characteristic was the level for which higher scores were found on POST. However, 73% of the medium sized course category was of the one- or two-semester course type. The other class size categories were fairly equal in terms of the distribution of course types. The large number of sequenced courses (for which the higher POST scores have already been discussed) in this category may have played a factor here. In fact, if the sequenced courses are removed from the analysis, the significant difference in POST on the basis of class size vanishes.

The final differences in POST on the basis of course characteristics were for field experiences and reflection activities. For field experiences, groups with fewer field experiences scored higher on the POST instrument. However, of the 517 students on which posttest scores and clinical base rate data were available, 308 (60%) did not require any field experience. The remaining 40% was distributed across the other four levels. The uneven frequencies here might have been a factor in the significant difference found in the data analysis. This supposition is supported if the level of "no field experience" is eliminated (the 308 student scores are removed). In that case, the significant difference for POST vanishes. Therefore, case use does not appear to be related to educational psychology knowledge when course type is given consideration. For reflective activities, the significant difference in POST was for the level of "light"

reflection. A review of the data set indicates that all of the second of two-semester courses were placed at this level. The fact that students in this course score higher on POST has already been discussed. If they are removed from consideration, the difference in POST on the basis of reflective activities also disappears. Reflection activities do not appear to be associated with educational psychology content knowledge when consideration is given to course type.

The second outcome measure for which there were significant differences on the basis of course characteristics was in the tendency to use diverse assessments (AAUSE). Significant differences in AAUSE were noted for the characteristics of course type, method, case use, and reflection activities. For course type, as reported previously, the significant differences were linear. Students in the two-semester type courses were more likely to use diverse assessments than students in the other types. It may be that there is more time devoted to alternative assessments in two semesters of educational psychology, and this is the reason students would show this tendency. This supposition is supported when the data is analyzed for assessment discussions. The assessment question asked the student to do two things: indicate what type of assessments had been discussed in their course and which assessments they felt they would use once they began teaching. If the assessment discussions are totaled and compared for course type, the means show significant differences between the one semester only and two-semester courses, $F(2, 424) = 8.043$, $p = .0001$. The means for "assessment discussed" for one-semester only, first of two, and second of two are 7.59, 9.59, and 8.01 respectively.

In the review of literature, it was noted that Clements (1991) had investigated educational psychology knowledge on the basis of method and reported inconclusive results. He used a three-course comparison model in which the method varied in each and the three courses were then compared. The results of this study would support Clements' findings in terms of educational psychology knowledge, as no clear-cut significant differences were found across course types. However, there were differences in AAUSE on the basis of method. Students with instructors rated as more non-traditional in methodology were more likely to indicate a tendency to use diverse assessments.

The professors in the present study ranged from 1.5 to 3.75 on a 5-point scale that denoted the amount of non-traditional methodology that they used to teach the course. In the literature review, Peterson et al. (1990) were referred to as stating that methods in educational psychology had not significantly changed; that instructors, even with the push for a "contemporary psychological perspective," were still pretty traditional. It is interesting to note that the group of instructors in the present study does not seem to fit the profile described in the literature. The average for this group was 3.1. If the instructional methods were still predominately traditional, the expected average would need to fall below the 2.5 level. Only three of the 12 professors in this group received scores at or below that level. Furthermore, another phenomenon occurs when you look at the anecdotal comments made by the professors in the interview process and/or research team meetings. At least four or five of the professors in this group would adamantly refer to themselves as "constructivists" or made a great deal of negative comments about

traditional lecture-test methods of instruction. If they were asked to place themselves on the 1-5 scale, they would probably give themselves a four or five. Yet, the review of their syllabi (in terms of assignments and activities) and their own students' interviews did not bear this out. The highest score given to a professor in this study was 3.75. It could be that, as teachers of educational psychology, we have become good at "talking the talk" but not "walking the walk."

For the characteristics of case use, the relationship with AAUSE was found to be linear and positive. Students in the courses with heavier case usage showed more of a tendency to use diverse assessments. Regardless of the cautions for sample size in terms of statistical significance, this result would appear on the surface to have some practical significance. One might assume that a course that used cases heavily would be more applied and practical in nature. If it were also assumed that the use of diverse assessments was affected by a combination of experience and training, it would be logical to assume that a course that focused on evaluating and relating to actual classroom practice (the cases) would result in students displaying this tendency. However, although the results for case use were found to be positive, care should be taken not to make specific prescriptions related to practice based upon two major issues. The first is sample size and the fact that this was not an experimental study. The second is that "how" the cases were actually used and the actual "type" of cases used was not a focus of this study. This information would need to be collected in any study making implications for the direct effects of case use.

The last characteristic upon which AAUSE showed significant differences was the amount of reflection activities that were embedded in the delivery of instruction in these educational psychology offerings. Students in the courses with no reflective activities showed significantly less of a tendency to use diverse assessments in their own professional practices. As was discussed previously, it may be the case that reflection is related to assessment use, but further analysis (including experimental manipulation) would be required to make this claim.

The third outcome measure for which there were significant differences on the basis of course characteristics was student grades (GRADE). Differences were found related to the characteristics of case use, method, class size, and field experiences. For case use, the courses using more cases had students with higher grades. However, the two failing grades were in the two lowest case use categories. If the comparison is recalculated without the "F" or "C" grades (the lowest ten), the significant difference in GRADE due to case use vanishes. For class size, the medium class size groups had lower grades. This difference did not end when a recalculation without the lowest ten was conducted, but the statistic did decrease from a Chi-square of 20.36 to a Chi-square of 13.54. Even with this adjustment, any recommendations as to educational psychology class size would require further investigation with more equality in the categories of size and increased variability in grades.

The significant correlation found between method and GRADE was positive. Faculties using more non-traditional methods were more likely to give higher grades. However, the cell sizes here need to be taken into consideration related to these results.

There were 12 professors who were compared across a distribution of grades that was skewed and limited in variability. The caution regarding grades still applies. In fact, when the lower grades were removed from consideration, the correlation decreased: *rho* (245) = .267, p = .0001, to *rho* (240)= .209, p = .001.

For field experiences, the lower grades were associated with courses that required little and/or no field experiences. The two lowest categories of field experiences contained the majority of the lower grades. This difference did not end when a recalculation without the lowest ten was conducted, but the statistic did decrease from a Chi-square of 71.78 to a Chi-square of 63.87. However, due to the lack of variability in grades and a non-experimental design, specific recommendations for practice are not justified at this time.

The fourth hypothesis required an investigation related to the possible significant interactions among these variables. As noted in the results chapter, no significant interactions were found and the null hypothesis was not rejected. However, not all of the interaction analyses could be calculated due to small cell sizes and multicollinearity problems. One cannot assume that no interactions existed among these variables. It is just that they were not discernable.

The final hypothesis called for an investigation of the possible inter-relationships among the variables targeted for study. In order to answer this question, a number of multiple regression analyses were conducted. Nine of the 15 individual characteristic category regressions yielded significant relationships in terms of predictors. For the regression equation across categories, four significant relationships were found. These

findings will be discussed for each outcome measure for which significant equations were found (POST, DIFF, GRADE, and AAUSE)

For educational psychology knowledge (POST), the individual characteristic regressions indicated that course type, age, gender, and the instructor's degree were the significant predictors within their respective categories. However, when all of the variables were loaded simultaneously, only course type and the instructor's degree remained as significant predictors. Because of the small sample size for any instructor category, the findings that the instructor's degree was a significant overall predictor should be viewed with more caution than course type.

For gain in educational psychology knowledge (DIFF), only the instructor's higher education experience remained after the category regressions analyses. It remained in the across category regression. Thus, for this study, this characteristic appears to be the only significant predictor of gain in knowledge. However, the caution about any instructor category must be taken into consideration.

For student grades, the individual characteristic regressions indicated that age, the instructor's experience in higher education, the instructor's experience in K-12 education, and method were significant predictors within their categories. When all of the variables were loaded across categories, only K-12 experience and method remained as significant predictors. But once again, both findings should be viewed with some caution due to sample size.

The last outcome measure for which regressions were conducted was the student's tendency to use diverse assessments (AAUSE). The individual characteristic regressions

indicated that the instructor's degree, method, and case study use were significant predictors within their categories. When all of the variables were loaded across categories, only the instructor's degree remained as a significant predictor. Of course, this finding should be viewed with some caution due to the relatively small instructor sample size.

Recommendations for Future Research Efforts

This study was cross sectional and correlational in design. Obviously, the first recommendation would be to move the research regarding the teaching of educational psychology to the causal comparative and experimental models. Due to both the nature of the design and the limited size of the sample, the conclusions related to the research questions are preliminary at best.

In the review of literature, I discussed how educational psychology is viewed from both outside and inside of the discipline. Although Derry's (1992) reference to "competing epistemological camps" may have been, and may still be apropos, his views did not seem congruent with the findings reported above. These instructors appeared to value educational psychology and reported that it should have a more prominent role within their respective programs of study. They seemed to value the "contemporary psychological perspective" and were making strides towards teaching in less traditional ways and incorporating clinical, reflective, and case-based experiences in order to make better connections between theory and practice.

The results of this study seem to support the expansion of the role of educational psychology in undergraduate and graduate teacher education programs of study. Students

in the program requiring two educational psychology courses had better outcomes on many of the measures. Professors expressed their preference for this course configuration. Nevertheless, more research related to the effects of this expanded role in terms of student outcomes, especially with an experimental paradigm and a more diverse sample population, needs to be completed before this mode of delivery becomes the "best practice" standard. In addition, it is suggested that longitudinal research be conducted related to this issue. The students surveyed in this study were all students in teacher-training programs. Whether some of the differences found when they were students themselves would remain when they began teaching remains to be determined. As noted by the Anderson et al. (1996) group, the issue of transfer must be addressed.

In the descriptions of the present sample, one conclusion was that there were some differences between the "picture" of the educational psychology student to be found in the literature and the typical student in this study. The percentages of minorities and persons already holding degrees in this cohort were both higher than expected. If these four universities are doing something different to recruit and support minority candidates in teacher education, it should be discerned and disseminated to other post-secondary institutions. Although not a focus of this dissertation study, the issue regarding the inadequate presence of minority teachers is an active publication area, one of personal interest, and one for which exemplary practices need to be discerned in order to increase the number of minority candidates in the teaching pool. As we enter an era where massive teacher shortages are being predicted, the fact that these universities also

appeared to be attracting persons with previous degrees and careers into their teacher training programs should also be systematically investigated.

The question related to whom is and perhaps should be teaching educational psychology cannot be answered definitively from the results of this study. Future investigations in this area need to place a priority on expanding the data set so that adequate comparisons would be possible and ascertain whether the differences found here would remain in a larger sample. At best, because there were differential relationships (some positive and some negative) for many instructor characteristics, it is recommended that educational psychology is probably best taught by someone with advanced training in the field who would either have (or be team teaching with someone who had) practical experience in teaching. Because there were some positive results associated with higher education experiences, the contention in the literature review that new instructors in educational psychology be mentored is supported by the interpretation of the findings. Experienced instructors of educational psychology need to take a more active role in the training and mentoring of new instructors. This idea is also supported from this researcher's personal experience of participating on the Teaching Educational Psychology Research Team. Many of the team members have remarked as to how it has impacted their own teaching as a result of the discussions in team meetings regarding teaching and the results of the various research initiatives. However, additional research is certainly essential to make more than a preliminary recommendation for practice.

In addition to the "when" and "who" questions, certainly an area in need of additional study is the "how." The fairly positive results for case use, clinical

experiences, and reflection activities found in this study are tempered not just by deficiencies in the size of the sample, but by other considerations as well. The type of cases used by the instructors was not investigated, nor was how the cases were used within the context of the instructional process. The same holds true for the role of clinical experiences and reflective activities. In addition, the heavier case use classes in this study were all placed later in the program and/or were the second of a two-semester sequence. Additional investigation is needed that not only increases the sample size, but turns a more focused lens on these characteristics.

Finally, in addition to the above-mentioned recommendations, which outcome measures are used to determine effects should be given additional attention. The problem with the use of student grades as an outcome measure has been discussed in numerous sections. It would appear to be a fairly biased measure in terms of how it can be obtained by an investigator. The assessment of educational psychology knowledge appears to have fairly good face validity. Nonetheless, a more rigorous analysis in support of validity and reliability would appear to be in order. The assessment measure was a self-report instrument. Perhaps, if future researchers extend their efforts to the evaluation of actual classroom practices, the subjects' actual use of assessments (instead of predictions about assessment) could be obtained and compared based upon some of the characteristics of interest documented in this study. The sequencing instruction measure was the one outcome for which there were no significant differences on the basis of the characteristics. The lack of any differences in this measure might call into question its validity. One might assume that students in a teacher education program of study had not

yet spent enough time sequencing instruction to be able to perform well on this exercise. However, there were graduate students in this sample, the majority of whom were practicing teachers. The fact that there were no differences on this measure between undergraduates and practicing teachers supports the supposition that this measure lacks something. Future investigators should definitely look into alternative ways to measure a subjects' ability to create and sequence instruction.

Summary Statement

What exactly is the purpose and/or place of educational psychology within teacher education programs of study? The results of this dissertation research study have yielded limited information related to addressing this question. Nonetheless, in terms of investigating the teaching of educational psychology along some of the dimensions noted by Rocklin (1996), some preliminary empirically-based recommendations have been made. The three foremost recommendations stem from the results related to three of the characteristics of interest. Understanding that the recommendations are interpreted with caution due to the non-experimental nature of the design and small cell sizes for some of the variables targeted for study, it appears that, because of the relationships found in the multiple analyses and diverse (both quantitative and qualitative) reviews of the data set, that educational psychology is best taught by an instructor with some advanced training in the discipline. In addition, students should be taking educational psychology later rather than sooner in their respective programs of study. Finally, the educational psychology requirement within teacher education programs of study seems to yield better outcomes for students if taught as a two-semester sequence.

APPENDICES

APPENDIX A

SAMPLE INSTRUCTOR LETTER

Research Project on the Teaching of Educational Psychology
Governors State University/Loyola University Chicago/Northeastern Illinois University/Western Michigan University

[date]

Dear [school name] Educational Psychology Instructor,

Thank you for agreeing to be a part of the research effort!

Enclosed are the pre-assessments for the teaching of educational psychology research project. Please hand them out to your students, have them complete during class, and collect them. Please do not allow them to take the assessments home.

Students should be told that participation is voluntary. Once they are coded into the database, their names and grades are destroyed. Their performance on the assessments or comments in interviews will in no way affect their grade for your course. In fact, you will not know what their responses were. They can choose to participate in a number of ways. They can choose not to participate at all. In this case, they should leave the assessment blank. They can choose to complete the assessment, but leave the space for name blank. In this case, we will not be able to match their responses to the posttest or correlate with their final grade, but they will still become a part of the database. They also must indicate whether or not they give you permission to release their final grade to the team after the term is over. They can also choose to participate in the assessments and not take a chance on being one of the students selected for telephone interviews. In this case, they should leave the phone number section blank.

After they are completed, please place in the envelope provided, seal, and return to [contact]. If your class is selected for post-assessments, you will receive another packet near the end of the term. You will also receive a list of those students who gave release for grades. In addition to these grades, please give samples of your course materials and a copy of your vita to [contact]. Please feel free to contact me at Governors State at 708-235-2149 or contact [contact] if you have any questions.

Sincerely,

Jean Johnson

APPENDIX B

SAMPLE ASSESSMENT

Governors State University/Northeastern Illinois University/
Loyola University Chicago/Western Michigan University

Research Project on the Teaching of Educational Psychology

Post-Assessment Section Code:_____

Thank you for agreeing to participate in this collaborative research effort. Although we will ask you to fill in your name on this questionnaire, it will not become a part of the database or be published in any way. We are asking for your name simply to match your responses here with your grade for the course. Names will be destroyed after the data are collected and entered into the database. Database entries are anonymous. Your performance on this assessment does not affect your final grade for this course in any way.

Name:_____Today's Date:_____
I give permission for my final grade to be released for entry into the database: I know my name will not be used.

☐ **Yes** ☐ **No**

Demographic Questions:

Age in years:_____

Sex: (Circle one) Female Male

Ethnicity: (Circle Applicable)
White (Non-Hispanic)
Black (Non-Hispanic)
Hispanic
American Indian or Alaskan native
Asian or Pacific Islander
Other

Phone (If open to interview):___ _____

Education Status Questions:

Present Major:_____

Attendance: (Circle One) Full time Part time
Status: (Circle One)
Graduate
Undergraduate

Do you attend classes primarily:
Daytime
Evening

Previous Degree(s):_____

Educational Psychology Knowledge

Please answer these questions to the best of your ability. Guessing is allowed.

1. According to Piaget, people's need for order, structure, and predictability is called:
   a. development
   b. learning
   c. maturation
   d. equilibrium

2. Which of the following are essential to Vygotsky's view of development?
   a. Social interaction and activity
   b. Close emotional relationships with adults and peers
   c. Adaptation through experimentation
   d. Individual trial and error and experimentation

3. Using Gardner's theory of intelligence, in which of the following dimensions would sales people be most likely to score highly?
   a. Intrapersonal Intelligence
   b. Linguistic Intelligence
   c. Logical-Mathematical Intelligence
   d. Interpersonal Intelligence

4. Consider the effects on students of being labeled "intellectually slow" or "academically weak", compared to students with similar characteristics who are not labeled. Which of the following is the most accurate statement according to research?
   a. Because they're identified, teachers provide more attention and support for labeled students
   b. Teachers provide less attention and support for labeled students than for comparable peers
   c. Teachers provide about the same structure and support

OVER

5. Social learning theory is best described as a view of learning that:
   a. emphasizes the social interactions that occur among students in classrooms.
   b. emphasizes the ways that students perceive and think about problems.
   c. emphasizes the effects of observing others on students' thoughts and behaviors.
   d. emphasizes the strategies that students use to solve interpersonal problems.

6. Which of the following teacher statements most promotes a learning-focused rather than performance-focused classroom?
   a. "Let's try hard now. I want to see a lot of A's and B's on the next test."
   b. "Very well done. Every person in the class improved on their scores compared to the last quiz."
   c. "Very good, everyone. Over half the class got either an A or a B on the last test."
   d. "C'mon now. Let's give some of these top students a run for their money on this assignment."

7. Which of the following systems of discipline advocate that rules be prominently displayed in the classroom and that teachers employ a simple system for setting consequences?
   a. Assertive Discipline
   b. Glasser's ten step program
   c. Jones "Discipline with Dignity" approach
   d. The Dreikur's Democratic Discipline format

8. Test content and/or procedures that favor one culture over another is defined as:
   a. diagnostic testing
   b. biased testing
   c. aptitude testing
   d. minimum competency testing

Content Evaluation Questions:
How do you think learning occurs? (Answer in 1-2 sentences)

Please list any examples of things done in this course that addressed how you as a teacher can diversify instruction to meet individual differences? (i.e., multiple intelligences, learning styles, cultural diversity)

How do you think teachers can best stimulate students' higher order or critical thinking skills?

What are strategies teachers can use to help students become self-motivated?

Alternative Assessment
For each of the assessment possibilities listed below, place a check mark (√) by those you discussed in your ed. psyc. class. In addition, put a star (*) by those you think you might use in your classroom.

___Written exams/Quizzes
___Portfolios
___Projects
___Research Papers
___Thought Papers
___Reflective Journals
___Classroom Participation
___Presentations
___Verbal Questioning
___Student Developed Tests
___Debates
___Think Alouds
___Learning Logs
___Exhibits
___Case Studies
___Performances

Sequencing Instruction Exercise
Listed below are 9 steps for a lesson in dichotomous classification for grades 5-8. The "potato chip classification" lesson steps are not in the correct order. Please number them as you think the lesson should proceed.

___Ask each group to devise and test a different dichotmous key
___Record results of first division & make a dichotomous key
___Display bags of chips and discuss similarities and differences
___Repeat the activity with another object such as candy or shoes
___Divide class into groups of 4-6 students
___Record and share the groups keys with the rest of the class
___Ask a volunteer to divide chips into 2 groups based on a similarity
___Provide each group with a sample set of chips
___Eat the chips!

APPENDIX C

ORGANIZATIONAL STRUCTURES

ORGANIZATIONAL STRUCTURES

-Traditional foundations metaphor: Educational psychology was added to the teacher education curriculum to improve scholarship and rigor...posing a scientific basis for further study. This view is now criticized due to contemporary constructivist views of learning and teaching.

-Overall goal of educational psychology: Help teachers develop contemporary psychological perspectives...perspective involves learning to notice certain features of a situation, raise questions about those situations, and consider and use interrelated ideas to respond to the situation...knowledge is assumed to be multidimensional, uncertain, unpredictable...much depends on how individual students construct meaning...it is recommended that we design courses that require students to deal with complexity and uncertainty.

-Anchored in contemporary cognitive science and constructivist views of learning: It is recommended that we teach from a psychological perspective that is grounded in contemporary cognitive science and constructivist views of learning (e.g., view teaching as research, the importance of prior knowledge, new knowledge is always situated, learning is socially and culturally mediated).

-Critical thinking: "Thinking like a psychologist is thinking scientifically...Problem-solving skills transfer into practice, while facts and theory often change- ...Scientific method involves the basics of any experiment, such as hypotheses; controls; systematic observations, and statistical analyses. ...It is important to look for both evidence and lack of evidence." (APA Monitor, 12/95).

-E/N comparisons: "An expert can be defined as one who works on the leading edge of his or her knowledge and skill. ...An expert seeks progressively to complicate the model of the problem to be solved whereas an experienced non-expert seeks to reduce the problem to fit available methods. ...Reflective practice (i.e., the disposition toward reflection is central to expert teaching." (Educational Researcher, Sternberg, 9/95).

-Community of learners (COL): "idea based social constructionism...assigns the highest priority in education to important ideas developed within and across the academic disciplines...a teacher's task is to create discourse communities...a classroom takes on the characteristics of a dining-room table where students converse easily about ideas." (Educational Researcher, Brown, 8/94).

APPENDIX D

INTERVIEW QUESTIONS

INTERVIEW QUESTIONS FOR STUDENTS

1. When did you take this class? (summer, fall or spring)
2. How many times a week did your class meet?
3. Age-
   Ethnicity-
   Gender-
   Graduate/undergraduate-
   Program of Studies?
4. Why did you take the class?
5. What knowledge did you have about educational psychology prior to the class?
6. How did the professor assess your prior knowledge?
7. What were the three most important things that you learned in the course?
8. What type of instructional practices/methods did the professor use?
9. How did your professor cover teaching as research?
10. Did a cognitive science view of learning play a large part in your class?
    -E/N
    -COL
11. Did a behavioral classroom management view play a large part in your class?
12. Did your instructor make an effort to meet the instructional needs of students from under-represented groups?
13. Did your professor address contemporary cognitive, social, and cultural constructivists views of learning theory and teaching?
14. Did your professor cover humanism?
15. Would you describe yourself as a postmodernist?
16. Would you describe yourself as a feminist?
17. What topics were you interested in the most? What topics appeared to be of special interest to the class?
18. To what extent did the instructors use innovative teaching methods?
19. What amount of time was allotted field-based activities in your class? Do you consider field-based activities to be important?
20. What one thing would you have changed in the course if you could?
21. What is the one thing you enjoyed most about the course?
22. What would you wish to see covered more thoroughly in the class?
23. Did the focus of the class meet your needs? If not, what topics and/or activities would have made the course better?
24. When do you think that this class should be taught within the context of the teacher certification programs of study?
25. Do you have any questions to put to me?
26. Describe how you learn.
27. What do you consider to be your strengths and weaknesses?
28. What were your instructor's strengths and weaknesses?
29. Were you satisfied with your grade in this course?

INTERVIEW QUESTIONS FOR PROFESSORS

1. When was your class taught? (summer, fall or spring)
2. How many times a week did your class meet?
3. Age-
   Ethnicity-
   Gender-
4. What types of students did you have in your class? (teachers, school psychology majors, others)
5. Were you challenged as a teacher in the course?
6. Did you make an effort to assess student's prior knowledge and establish a baseline of knowledge?
7. How did you do this?
8. Describe your overall conceptual framework? What do you consider to be the three most important things students should learn in the educational psychology class?
9. What type of instructional methods did you use?
10. What are your views related to viewing teaching as research?
11. Did a cognitive science view of learning play a large part in your class?
    -E/N
    -COL
12. Did a behavioral classroom management view play a large part in your class?
13. How did you design your course to meet the instructional needs of students from under-represented groups?
14. Describe your views of cognitive, social, and cultural constructivism.
15. Describe your view of humanism.
16. Would you describe yourself as a postmodernist?
17. Would you describe yourself as a feminist?
18. What topics did the students like most?
19. Overall, what would you say is your main instructional method?
20. What amount of time was allotted for field-based activities in your class? Do you consider field-based activities to be important?
21. What is the one thing that you liked most about the course?
22. What is the one thing that you would change in the course if you could?
23. What did you wish you emphasized more?
24. What was your overall goal in teaching educational psychology? (Why did you teach the class?).
25. What were your students' strengths and weaknesses?
26. What do you perceive to be your strengths and weaknesses?
27. When do you think this class should be taught within the context of the teacher certification programs of study?
28. Do you have any questions to put to me?

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The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

4/9/02
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