CONTRIBUTION OF SUPERVISOR AND SUPERVISEE PERSONAL EPISTEMOLOGY TO THE SUPERVISORY WORKING ALLIANCE

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CONTRIBUTION OF SUPERVISOR AND SUPERVISEE PERSONAL EPISTEMOLOGY TO THE SUPERVISORY WORKING ALLIANCE

by

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To my loving and inspiring wife Janny, my wonderful children Justin, Ginger and Jonathan and their families, my mother Dorothy, and my recently deceased father John. My father stimulated my quest for exploring how we know what we know by sharing with me his own questions about knowledge and knowing in my youth. As we discussed the wonders of physics, astronomy and the universe, he would conclude with his most frequent theme, "Ross, we humans invent language to describe what we think we know; however, we should never confuse what we think we know with truth."

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Ross L. Flynn

PREFACE

The influence of personal epistemology has fascinated me from my youth. In those days I didn't know what it was called, but I have always wrestled with how we humans know what we think we know. Growing up in a convincing family of educated parents and four bright siblings who regularly shared their absolute truths, I found myself in a life-long fascination with truth. I remember asking the questions, but I didn't know how to find satisfying answers. Many years later, in graduate school I came upon the field of personal epistemology and began to find the satisfying answers to my quest: that our often unwitting assumptions about knowledge and knowing determine for us what we call truth. So this paper is my first step of many in exploring the influence of personal epistemology.

ABSTRACT

CONTRIBUTION OF SUPERVISOR AND SUPERVISEE PERSONAL EPISTEMOLOGY TO THE SUPERVISORY WORKING ALLIANCE

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Ross L. Flynn

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This study investigated the relationship between personal epistemology and supervisory working alliance among supervisors and supervisees in the counseling mental health field. Participants were 107 graduate student supervisees and their 107 supervisors.

Personal epistemology was assessed by having participants complete the Epistemic Beliefs Inventory which produced scores on five dimensions of beliefs: simple knowledge, certain knowledge, omniscient authority, innate ability and quick learning. Supervisory working alliance was measured by using the Working Alliance Inventory, modified to include supervisor and supervisee forms for use in supervision research.

Multiple regression was used to explore (a) the relationship between personal epistemology and working alliance, (b) the influence of gender, age and education on epistemology and working alliance, (c) the interaction of supervisee and supervisor epistemology on working alliance, and (d) the relationship between supervisee and supervisor working alliance.

The results of the study indicated (a) personal epistemology was significantly related to working alliance, (b) gender, age and education were related to epistemology, and personal epistemology was significantly related to working alliance after the effects of gender, age and education were considered, (c) interactions were found between supervisee and supervisor epistemology as predictors of working alliance, suggesting the importance of epistemology on working alliance varies over the range of the dyad partner's epistemology, and (d) supervisee and supervisor perceptions of their working alliance were significantly related.

The results of this study are significant because they suggest that where success is desired in a change-inducing relationship, the personal epistemology of both is of significant importance.

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LIST OF ABBREVIATIONS

Beta	Beta coefficient which indicates the portion of standard deviation change in the outcome for every standard deviation increase in the predictor
CK	Certain Knowledge
DV	Dependent Variable
EBI	Epistemic Beliefs Inventory
EE	Supervisee
EQ	Epistemology Questionnaire
IA	Innate Ability
IV	Independent Variable
LEP	Learning Environment Preferences
M	Mean
N	Number of subjects
OA	Omniscient Authority
OR	Supervisor
p	Level of probability that the result was obtained by chance; level of significance used to indicate the chance we are wrong in rejecting the null hypothesis
QL	Quick Learning
r	Pearson product-moment correlation coefficient, used to measure the size and direction of the linear relationship between two variables; regression is used to predict one variable from the other (or many others)
SD	Standard Deviation

SK	Simple Knowledge
t	t test statistic for determining the level of significance when comparing two means
WAI	Working Alliance Inventory

CHAPTER ONE

INTRODUCTION

It is widely held in the field of epistemology that people are influenced by their personal beliefs about knowledge and knowing. Regardless of age, intelligence, or the complexity of the subject, their private and often unwitting assumptions about knowledge profoundly impact their conclusions. As they read the newspaper or watch the news, they are faced with knowledge claims proposed for their acceptance. As they listen to politicians make promises, they evaluate what seems to be valid, based on their assumptions. CNN describes how the war in Iraq is going. An editorial urges support for social service needs of immigrants. A health report suggests that diet soft drinks lead to weight loss. A movie reviewer trashes a movie they were looking forward to seeing. A religious leader promises healing to followers who send in a portion of their income. These knowledge claims put a demand on people's thinking: "Do I accept their claims, reject them, ignore them, report them, pursue more evidence, or respond in some other way?" People make judgments about what is credible and what is not, based on their assumptions. That which seems credible to them is assimilated or "learned."

Thus, learning is impacted by beliefs about knowing. If people believe that knowledge or truth is handed down to them by people in authority and is not to be questioned, they come to very different conclusions than if they believe knowledge is constructed from experience, observation and reason. If they assume that knowledge is

simple and certain, they look for such knowledge and tend to arrive at conclusions quickly and firmly.

These personal beliefs and assumptions have come to be called *personal epistemology*. Hofer & Pintrich (1997) defined personal epistemology as "how individuals come to know, the theories and beliefs they hold about knowing, and the manner in which such epistemological premises are a part of and an influence on the cognitive processes of thinking and reasoning" (p. 88). These epistemic beliefs are utilized as humans engage in learning and knowing. For example, when toddlers experience abuse and come to assume the world is a dangerous place, they "learn" and "know" that others cannot be trusted, which profoundly affects their lives, as Erikson (1950) hypothesized. When radical fundamentalists assume or believe that America is the embodiment of evil (which in their minds may be simple and certain), they "learn" and "know" that God wants them to eradicate the American way of life from the earth, even if it costs them their lives.

In the 2nd century A.D., Ptolemy (150 A.D.) observed the path of the stars and planets across the night sky and assumed the earth was the stationary center of the universe with the stars and planets rotating around it. This knowledge was so obvious even a child could "know" it was true. The world of science and religion "knew" it to be true for 1400 years. In the 16th century A.D., the amateur astronomer Copernicus (1514) assumed and argued the earth was in daily rotation around a stationary sun. The world of science and religion began to "learn" a different "truth." Their beliefs and assumptions changed, which profoundly impacted their knowledge. (Of course scientific evidence

would now indicate that neither assumption was valid, as neither the earth nor the sun are stationary – as far as we "know"!)

Epistemological questions arise any time people stop to ask themselves, "How did I acquire my beliefs? Is what I believe true? Should I reconsider my beliefs in light of this additional evidence?" People face questions of personal epistemology when they reflect on beliefs that are popular in their culture. For example, a recent Gallup Poll (D. W. Moore, 2005) found that three in four Americans have at least one paranormal belief. Over 40% believe in extrasensory perception (ESP); 37% believe that houses can be haunted. A quarter of Americans believe that their personal destiny is controlled by the positions of the stars and planets (astrology). Are people who hold such beliefs irrational? If so, on what basis is that judgment made? Pollsters regularly survey the population on controversial subjects including the death penalty, divorce, medical research using stem cells obtained from human embryos, gambling, medical testing on animals, sex between an unmarried man and woman, having a baby outside of marriage, doctor-assisted suicide, homosexual relations, abortion, suicide, cloning humans, extra-marital affairs and polygamy. One's personal epistemology influences one's values and beliefs regarding these subjects.

Likewise, in the mental health field, counselors in a clinic or a school have assumptions and beliefs about knowledge that influence what is "true" for them. If they assume knowledge is passed down by their favorite authority and is objectively true, for example, their view of what is valid will reflect those assumptions. Their biases and assumptions are typically utilized as they work with their clients and supervisors (Bernard & Goodyear, 2004; Friedlander & Ward, 1984). When they "know" they are

"right," they may be more likely to impose their "right" conclusions on others, or treat others' conclusions as incorrect or inferior. Using Piaget's (1936) terms, a concrete knower might have difficulty viewing knowledge in constructivist terms (Hofer & Pintrich, 2001). In like manner, a concrete counselor or supervisor might have difficulty viewing knowledge about counseling and supervision in constructivist terms.

On the other hand, if a counselor or supervisor operates from a more complex personal epistemology (i.e., they assume knowledge is tentative and contextual), they tend to welcome multiple perspectives, they perceive others as active makers of meaning and "truth," and they seek to understand people rather than needing to change them with their "truth." They tend to choose and affirm commitments to personal identity, relationships, values, and principles (Hofer & Pintrich, 1997).

How might a relationship between two people be impacted by these epistemic assumptions? Let's imagine a supervisor, Dr. Martha, and her supervisee, John. One might imagine several possibilities. If both enjoy a complex personal epistemology, one would expect them to be respectful of each other's constructions and mutually desirous of learning and exploring. On the other hand, if either of them held a dualistic, "my-way-or-the-highway" personal epistemology, one might imagine a more difficult relationship. If John were the dualist (i.e., someone whose personal epistemology is structured in very concrete, black and white ways), Dr. Martha might experience frustration trying to teach him. If John rigidly insisted on his "truth" in spite of Dr. Martha's efforts to invite him to consider a different perspective, one might imagine their relationship would suffer. Alternatively, if Dr. Martha were the dualist, insisting there was only one "correct" way and it was hers (and John enjoyed a more complex personal epistemology), one might

again imagine a challenge to learning and relationship. If both of them were dualists, each declaring their own "truth" to be the only way, one might imagine an even more intractable relationship. Exceptions to this harm to relationship might occur if both dualists agreed on the same "truth" (arguably a temporary exception, since no two people agree on everything), or if one of them were emotionally dependent on the other to feel good about self -- sacrificing their own "truth" for the objective "truth" of the other. So one can easily imagine how a supervisory relationship could be positively or negatively affected by the personal epistemology of each of the parties.

Although these hypotheses about the ways in which personal epistemology may affect the supervisory relationship have generally not been researched, other aspects of the supervisory relationship have received great research attention. One important variable that has been widely researched is the *supervisory working alliance* (Bahrick, 1990; Baker, 1990; E. S. Bordin, 1983; Efstation, Patton, & Kardash, 1990; Gelso & Carter, 1985). Bordin (E. S. Bordin, 1983) described this therapeutic working alliance as a "collaboration for change" (p. 35) identified by three aspects: (1) mutual agreements on the *goals* sought in the change process; (2) a mutual understanding of the *tasks* those shared goals impose; and (3) the *bonds* between them necessary to sustain their common enterprise. The writer hypothesizes personal epistemology contributes to this supervisory working alliance and proposes to study the contribution of personal epistemology to the working alliance that exists between supervisors and supervisees.

This study is important because the contribution of epistemological beliefs to the supervisory working alliance in mental health counseling has not yet been studied. The field of personal epistemology is still in its infancy. The role of epistemological beliefs

in the larger picture of cognition and affect has yet to be fully identified (Hofer & Pintrich, 2001; Schommer-Aikins, 2001).

Researchers are beginning to examine the idea of a system of epistemological beliefs within various *domains* and *disciplines*, such as science and mathematics versus counseling and psychology (Hall, Chiarello, & Edmonson, 1996; Hofer & Pintrich, 2001; Kardash & Scholes, 1996; Winne, 1995). This study will contribute to the research that explores epistemic beliefs within the discipline of counseling.

Researchers have studied personal epistemology of mental health counselors (Granello, 2002; McAuliffe & Lovell, 2006) from a developmental perspective, utilizing the Perry scheme (Perry, 1970). Their research utilized the Learning Environment Preferences (LEP) constructed by W. S. Moore (1989) as a means of assessing the Perry scheme. Hofer & Pintrich (1997) suggest the LEP "is not likely to be of use in studies of graduate students or well-educated adults" (p. 132) because of its ceiling effect of measuring only up to Level 5 in a 9-level scheme. An alternative to the developmental model and its assessment tools is the epistemological beliefs model which challenges the notion that epistemology develops in fixed stages (Schommer, 1990). This model proposes a belief system made up of five more or less independent dimensions, has several psychometrically sound assessment tools, and is utilized frequently by leading-edge researchers in the field (Bendixen, Schraw, & Dunkle, 1998; Hofer, 2000; Schommer-Aikins, 2001; Schraw, Bendixen, & Dunkle, 2001).

No researchers have yet studied the epistemic beliefs of both counselors and their supervisors using the epistemological beliefs model. In addition, no researchers have

correlated epistemological beliefs with the supervisory working alliance that exists between supervisors and supervisees. This research will attempt to do both.

The implications of this research are profound. At a practical level, identifying a relationship between personal epistemology and therapeutic alliance would invite supervisors and supervisees to observe their alliance through the lens of their epistemic assumptions. They could then challenge their own epistemic assumptions, resulting in a stronger alliance, a more productive experience in supervision, and improved service to clients. At an educational level, this research could influence instructors and counseling departments to include personal epistemology as a subject of reflection in the training of counselors and counselor educators. If counselors and their supervisors could be influenced to reflect on and challenge their assumptions about what they "know," the counseling room would arguably become a safer place. Acceptance of diversity, even prizing diversity, would be welcomed. Intolerance would lose its energy, its attraction, its exclusive correctness. Relationships between supervisors, counselors and clients would be enhanced. Exclusivist, positivist, objectivist, dualistic, my-way-or-the-highway thoughts could be replaced by respect for and acceptance of contextual truth.

Assumptions

The purpose of this study is to examine the ability of epistemic beliefs to predict both supervisors' and supervisees' perceptions of the supervisory working alliance.

My assumptions include the general findings in the field of personal epistemology, counseling and supervision, specifically:

1. Personal epistemology impacts one's conclusions about knowledge and knowing (Baxter Magolda, 1992; Hofer, 1997; Hofer & Pintrich, 2001; King & Kitchener, 1994; Kuhn, 1991; Perry, 1970).
2. Personal epistemology facilitates cognition, motivation and learning (Butler & Winne, 1995; Hofer, 1994; Ryan, 1984a, 1984b; Schommer-Aikins, 2001; Schommer, 1990, 1993a; Schommer, Crouse, & Rhodes, 1992; Schultz, Pintrich, & Young, 1993).
3. Personal epistemology has been correlated to such cognitive tasks as moral and argumentative reasoning (Bendixen, Schraw, & Dunkle, 1998; Kuhn, 1991; Walker, Rowland, & Boyes, 1991), reflective judgment (King & Kitchener, 1994; Kitchener & King, 1981), cognitive development (Benack & Basseches, 1989; Chandler, Boyes, & Ball, 1990), solving ill-structured problems (King & Kitchener, 1994; Kuhn, 1991; Schraw, Dunkle, & Bendixen, 1995), comprehension of complexity (Cunningham & Fitzgerald, 1996; Schommer, Crouse, & Rhodes, 1992), ability to observe and reason, and critical thinking (Schommer, Crouse, & Rhodes, 1992).
4. Cognitive complexity exists as a significant personal characteristic among supervisors and supervisees (Birk & Mahalik, 1996; Borders, 1989; J. M. Martin, Slemon, Hiebert, Hallberg, & Cummings, 1989; Stoppard & Miller, 1985).
5. A counselor or supervisor's effectiveness lies largely in the person and the characteristics of the professional (Bernard & Goodyear, 2004; Wampold, 2001).

Research Questions

This study is designed to explore the relationship between personal epistemology and the supervisory working alliance. Research questions include:

1. What is the influence of personal epistemology on Working Alliance?
    (A) What is the influence of *supervisee* epistemology on Working Alliance?
    (1) Does supervisee epistemology predict relationship success, defined as supervisee composite score on the Working Alliance Inventory (WAI)?
        (2) Does supervisee epistemology predict relationship success, defined as supervisor composite score on WAI?
        (3) Does supervisee epistemology predict relationship success, defined as the sum of supervisor and supervisee composite scores on WAI?
    (B) What is the influence of *supervisor* epistemology on Working Alliance?
    (1) Does supervisor epistemology predict relationship success, defined as supervisee composite score on WAI?
        (2) Does supervisor epistemology predict relationship success, defined as supervisor composite score on WAI?
        (3) Does supervisor epistemology predict relationship success, defined as the sum of supervisor and supervisee composite scores on WAI?
2. Does personal epistemology influence Working Alliance after controlling for age, education and gender?

(A) Does supervisee gender, age, or education have an influence on supervisee personal epistemology as they predict relationship success, defined as supervisee or supervisor composite scores on WAI?

(B) Does supervisor age, education or gender have an influence on supervisor epistemology as they predict relationship success, defined as supervisee or supervisor composite score on WAI?

3. Are there significant interactions between predictors?

(A) Is there a significant interaction of supervisor epistemology on supervisee epistemology as they impact relationship success, defined as supervisor composite score on WAI?

(B) Is there a significant interaction of supervisee epistemology on supervisor epistemology as they impact relationship success, defined as supervisee composite score on WAI?

4. What is the relationship between supervisee and supervisor perceptions of the working alliance?

In the next chapter, I review the history of the study of personal epistemology, hypothesize a connection between epistemic assumptions and working alliance, and proposes to integrate the research in the fields of personal epistemology and supervisory working alliance.

CHAPTER TWO

LITERATURE REVIEW

Personal epistemology has been increasingly studied since the 1950s, resting on a foundation traced to Piaget's (1950) genetic epistemology and William Perry's (1970) work on the epistemological development of college students (Hofer, 1997). Piaget and Perry observed that people's conclusions about knowledge and "truth" are strongly influenced by their often unwitting assumptions and beliefs about learning and knowing. These assumptions and beliefs have come to be called, among other terms, *personal epistemology* (Hofer, 2001; Hofer & Pintrich, 1997). One's personal epistemology serves as a lens that influences one's perception of truth.

One of the many domains where people utilize personal epistemology is clinical supervision in the mental health field. Supervision is an intervention that plays an important role in self-regulating the standards of the counseling profession (Holloway & Neufeldt, 1995). That self-regulation includes controlling who is admitted to practice, setting standards for members' behavior and disciplining incompetent or unethical members. Supervisors teach essential skills, socialize supervisees into the profession's values and ethics, protect clients and observe the readiness of apprentices to be admitted to the profession (Bernard & Goodyear, 2004). Supervision has been defined as

> "an intervention provided by a more senior member of a profession to a more junior member or members of that same profession. This *relationship* [italics mine] is evaluative, extends over time, and has the simultaneous purposes of

> enhancing the professional functioning of the more junior person(s), monitoring the quality of professional services offered to the clients that she, he or they see, and serving as a gatekeeper for those who are to enter the particular profession" (Bernard & Goodyear, 2004, p. 8).

Supervision is essential to the mental health profession, is evaluative at its core, and is intended to be a change-inducing relationship. This relationship between supervisor and supervisee is called *supervisory working alliance* (Bahrick, 1990; Baker, 1990; E. S. Bordin, 1983; Efstation, Patton, & Kardash, 1990).

One might suspect a relationship between personal epistemology and supervisory working alliance because one's assumptions tend to affect one's relationships. For example, epistemic assumptions influence a supervisor's or supervisee's evaluation of their own psychological processes, their supervisee/supervisor and their clients. Epistemic assumptions influence their ability to reason, their inclination to learn, and hence, their working alliance as they seek to collaborate on goals, tasks and bonds. The goal of this research is to measure the contribution of epistemic beliefs and assumptions to the supervisory working alliance.

In order to understand the relationship between personal epistemology and supervisory working alliance, the research in both these areas must be reviewed. Therefore, the following literature review will be divided into two broad sections: (a) personal epistemology and (b) the influence of individual differences in the supervisory relationship. The section on personal epistemology will include its general definition, a review of its research history over the past 60 years, an expanded description of the model to be used in this study, and a refinement of its construct used in this research.

The section on the influence of individual differences in the supervisory relationship will include a review of the research correlating cognitive complexity with counseling and supervision competencies, a description of the research on the supervisory working alliance, a summary of the research on how supervisory behavior is affected by one's assumptive world, and a synopsis of the research on what personal characteristics have been studied to date that predict supervisory working alliance.

Personal Epistemology

As a branch of philosophy, epistemology focuses on the "origin, nature, limits, methods and justification of human knowledge" (Hansen, 2004, 2006; Hofer, 2001, p. 4). This branch of philosophy has influenced the formation of a psychological construct known as personal epistemology. Like philosophy, personal epistemology is concerned with human knowing. Unlike philosophy, however, personal epistemology is viewed as a psychological construct, not an abstract philosophical area of study. From a psychological and educational perspective, personal epistemology is studied to explore

> "how the individual develops conceptions of knowledge and knowing and utilizes them in developing understanding of the world. This includes beliefs about the definition of knowledge, how knowledge is constructed, how knowledge is evaluated, where knowledge resides and how knowing occurs" (Hofer, 2001).

The next section will provide a brief sketch of the history of personal epistemology.

History of Personal Epistemology

Piaget's Genetic Epistemology

In the 1950s, Piaget (1950) used the term *genetic epistemology* to describe his schema of childhood intellectual development, emphasizing the interaction between biological development and experience. He suggested that ways of thinking and knowing, which he called *cognitive structures*, pass through successive stages of development, from sensori-motor action schemes to representational to conceptual thought.

As a young man Piaget wrote his doctoral thesis on the classification of mollusks, and observed that they adapt their inherited structure to their environment (Dworetzky, 1993; Vidal, 1994). When he read with fascination Baldwin's theory (Baldwin, 1894) that children's cognitive development progresses through stages, he wondered if children's brains adapt to their environments as well. This led to his decades-long study of cognition, arguing as did Baldwin, that children cognitively adapt to their environments through assimilation (applying current schemes to new situations) and accommodation (changing a scheme to get it to work better) (Campbell, 1997).

Piaget concluded that older children, rather than just knowing *more* than younger children, actually think and "know" *differently* about their world through cognitive growth (Piaget, 1972, 1990). That is, they have a different kind of epistemology (Campbell, 1997).

Piaget's genetic epistemology triggered the interest of developmental psychologists to study how individuals come to "know" differently, a field of study which came to be called developmental or personal epistemology (Hofer & Pintrich,

1997). While Piaget was publishing his research on how knowledge develops in human organisms (Piaget, 1950), William Perry was mapping the cognitive and moral development of undergraduates at Harvard (Perry, 1970, 1998).

The Perry Scheme

In 1947 William Perry founded the Bureau of Study Counsel, an education research center at Harvard, where he and his staff counseled and tutored about 400 students a year for 30 years. He was fascinated with how people construct meanings and shift those constructions "to developmentally accommodate uncertainty, paradox, and the demands of greater complexity in knowledge and learning" (Perry, 1998, p. xii). Perry saw students as people in developmental transition, journeying through stages which were perhaps only "resting points" (Perry, 1998, p. xiii) along the way. He was interested in the possibility of combining developmental stage theory with learning styles theory to inform his design of an effective classroom learning environment (Perry, 1998, p. xv). This influenced Perry during the late 1950s and into the 1960s to conduct his landmark research to analyze how students learned during their college years (Perry, 1998).

Perry and his colleagues conducted interviews each spring with undergraduates as they moved through their years at Harvard. He developed an interview instrument called a Checklist of Educational Values (CLEV) based on research that suggested that differences in student responses to the relativistic college environment were largely due to personality (Adorno, Frendel-Brunswik, Levinson, & Sanford, 1950; Perry, 1998; Stern, 1953). The first question in these open-ended annual interviews was "Would you

like to say what has stood out for you during the year?" His purpose was to explore what was noteworthy in their educational experience without biasing their answers with his own structure. After exhaustive qualitative analyses of his longitudinal studies, Perry concluded that college students' construction of their world had less to do with personality and more to do with a logical, cognitive developmental process (Perry, 1998).

Perry's findings led to a theory of epistemological development of students, the Perry scheme, from which nearly all subsequent psychological work on epistemological beliefs can be traced (Hofer & Pintrich, 1997). He posited that students, as they mature, pass through a sequence of epistemological perspectives which give meaning to their educational experience (Perry, 1998). Perry characterized this educational journey as "an intellectual Pilgrim's Progress" (Perry, 1974, p. 3). The Perry scheme has nine stages or positions from which to view the world. These nine positions have been grouped into four categories by later refiners of the model (Knefelkamp, 1974; Knefelkamp & Slepitza, 1978; Kurfiss, 1988; W. S. Moore, 1991, 1994). These four categories are: (a) *Dualism*, (b) *Multiplicity*, (c) *Relativism*, and (d) *Commitment*.

Dualism is a position where people view the world in polarities: right or wrong, black or white, we or they, and good or bad. Dualists tend to hold an unquestioned view of truth as simple, certain, and dispensed by authorities (e.g., parent, teacher, or church), leaving the students dependent on authorities to hand down objective truth. They feel certain that right and wrong answers exist for everything. Perspectives and beliefs different from their own are experienced as simply wrong. Dualists see knowledge as a collection of information. Teachers are seen as the source of knowledge, and their role is to dispense it to the student. From the perspective of a dualist student, a good student

receives the knowledge and demonstrates having learned the right answers. Questions and answers should be clear-cut. A dualist student is concerned if the teacher or the content of the class are ambiguous or tentative.

Perry found that students gradually became aware of a diversity of opinions and a *multiplicity* of perspectives held by others, which tended to shake their dualistic faith in absolute authority and truth. He found that the stage of *Dualism* often gives way to the epistemologically higher level of *Multiplicity* as students begin to realize that authorities disagree, so "right" may not be so simple or certain, and authorities may not have all the right answers. At the stage of *Multiplicity*, a student's personal epistemology begins to allow for genuine uncertainty between authority and absolute. The student begins to grow beyond dependency and trust in external authorities. He or she may begin to wonder, "Where Authority doesn't know the answer yet, is not any answer as good as another?" and be struck by the observation that "Here was this great professor, and he was groping *too*?" (Perry, 1998, p. 99). Uncertainty at this stage leads to a new certainty, "no one" (Perry, 1998, p. 109) knows for sure, which begins to pave the way for the importance of the student's own thinking.

As students move from *Multiplicity* toward *Relativism*, they begin to focus on developing their own opinions as distinct from "the way [Authorities] want you to think" (Perry, 1998, p. 112). Up until this point in the development of personal epistemology, students assimilated new information into some form of their original dualistic structure. A transition to *Relativism* is the watershed epistemological move in the Perry scheme which he characterized as a "drastic revolution," "the radical reperception of all knowledge as contextual and relativistic" (Perry, 1998, p. 121). Students essentially

transition from a dualistic worldview with a growing number of exceptions, to a relativistic worldview with a few dualistic exceptions. They begin to see knowledge as contextual. They begin to observe themselves as active makers of meaning. They understand truth as relative to the knower. The meaning of an event begins to depend on the context of the event and the worldview of the knower. Like the collapse of the Ptolemaic cosmology, the student consigns *Dualism* to the lowly status of a special case, elevates *Relativism* to the exciting status of new context, and begins to "apprehend the implications of personal choice" (Perry, 1998, p. 122) in this new world.

Perry found that relativism influences all areas of life, not just academics. The student begins to see that knowledge is constructed, not dispensed. It is contextual, not absolute. The knower and the known are irrevocably linked. Authorities lose their "cosmic aura". "Authority [capital A] becomes authority [small a], a social function" (Perry, 1998, p. 135). The capacity for detachment increases. One can no longer "believe" in a religious "Absolute" in a simple unquestioned sense (Perry, 1998, p. 146). "The moral obligation to convert [other people with a different belief or faith] or to annihilate them has vanished" (Perry, 1970, 1998, p. 146).

Perry observed that it is from this position of relativism that personal identity and commitment evolve, which empowers the final category of *Commitment* (Perry, 1998). The assumptions of this most developmentally advanced stage include knowledge as contextual, truth as relative to the knower, and individuals as free to choose and commit to the meanings that work best for them.

The Perry scheme serves as the theoretical foundation for research in the area of personal epistemology. He found that people's beliefs about knowledge and knowing

determine what is true for them, what is knowledge, what is valid. Those who believe knowledge is absolute and comes from authorities outside of self look for such knowledge and soon find it. Those who believe knowledge is contextually relative and valid because of one's own analysis and reason come to very different conclusions about knowledge and truth (Perry, 1998).

Both Perry and Piaget laid the groundwork for further research in personal epistemology by positing that humans do not arrive at knowledge by just knowing *more*, but rather by knowing *differently*. Our unwitting assumptions, our beliefs, our personal epistemology determine for us what seems true and valid.

Since Perry (1970), several major models of personal epistemology have been developed. Among these models, three simultaneous lines of research have emerged, including (a) how individuals interpret their educational experiences (Baxter Magolda, 1987, 1992; Belenky, Clinchy, Goldberger, & Tarule, 1986; Perry, 1970, 1981), (b) how epistemology influences thinking and reasoning (King & Kitchener, 1994; King, Kitchener, Davison, & Parker, 1983; Kitchener, 1984, 1986; Kitchener & King, 1981; Kuhn, 1991), and (c) epistemology conceptualized as a system of independent beliefs (Ryan, 1984a, 1984b; Schommer-Aikins, 2001; Schommer, 1990, 1994b; Schraw, Bendixen, & Dunkle, 2001). What follows is a summary of the history of personal epistemology since William Perry (1970).

Perry (1970) was the pioneer of the group of researchers who focused on how individuals interpret their educational experiences. His research was conducted with undergraduates who were primarily male. In response to Perry's research, four women

gathered in a jacuzzi in White River Junction, Vermont to discuss the possibility of a writing project that would address the experiences of women in higher education.

Women's Ways of Knowing

These four women were Mary Belenky, Blythe Clinchy, Nancy Goldberger and Jill Tarule. Belenky and Tarule had recently completed their dissertations at Harvard where they had worked with Perry. Goldberger and Clinchy were involved in longitudinal research studying student development at their own universities, Simon's Rock Early College and Wellesley College, respectively, and had become increasingly interested in the Perry scheme. They studied the educational experiences of women and found that "many of the answers the women gave to the 'Perry questions' could not be wedged into the 'Perry scheme'" (Belenky, Clinchy, Goldberger, & Tarule, 1986, p. xiii). These pioneering women developed a different scheme with five perspectives from which women view reality and draw conclusions about truth. This different scheme is summarized in their book "Women's Ways of Knowing" (Belenky, Clinchy, Goldberger, & Tarule, 1986). Those five perspectives are: (a) *Silence,* a position of women who feel their voice is silenced, who feel "deaf and dumb" (p. 24), experience disconnection, obey wordless authorities, and are expected to be seen but not heard, (b) *Received Knowledge,* a perspective of women who believe that "all knowledge originates outside of the self, [so] they must look to others even for self-knowledge" (p. 48), (c) *Subjective Knowledge,* a position of emergence from "passivity to activity … from silence to a protesting inner voice and infallible gut" (p. 54), which leads to a willingness to walk away from the past, to develop new relationships and new concepts of the self, (d) *Procedural Knowledge*, a

move toward reasoned reflection, bringing together both "separate knowing" (p. 103), the development of critical thinking skills, and "connected knowing" (p. 112), founded on empathy and first-hand experience rather than the dogma of authorities. The final position they described was (e) *Constructed Knowing*, a position where one tries to integrate all the voices within oneself, the voice of reason, the voice of intuition and the voice (i.e., expertise) of others. One can't help but notice the similarity in the structural, developmental sequences in these five positions as compared with Perry's positions, beginning with what might be called under-development and ending with sophistication or complexity.

Epistemological Reflection Model

In 1986, in response to Perry's (1970) and Belenky, Clinchy, Goldberger & Tarule's (1986) works, Baxter Magolda instituted a 5-year longitudinal qualitative study of the evolution of epistemological assumptions of both males and females during young adulthood (i.e., from age 18 to 30). This research led to her Epistemological Reflection Model (Baxter Magolda, 2001). She described four patterns of social construction among young adults as they "move from dependence on authority to self-authorship" (p. 91): (a) *Absolute Knowing*, based on knowledge as certain and people designated as authorities who know the truth, a prevalent view through the first two years of college (pp. 93-94), (b) *Transitional Knowing*, where students begin to experience doubt and uncertainty in the areas where different interpretations are offered, e.g., in the humanities and social sciences as distinct from the certainties in mathematics and science. She found this was the most common view during the college years (p. 94), (c) *Independent Knowing*,

characterized by the assumption that most knowledge is uncertain. "Everything's relative … there's no truth in the world … each individual has their own truth….," a view that becomes more common after college (p. 95). Last, (d) *Contextual Knowing* is a shift to assuming knowledge is constructed in a context, which enables one to learn to think through problems, apply knowledge in specific contexts, and make choices based on evidence (p. 96) (Baxter Magolda, 2001). Here again we see patterns similar to the stages proposed in the Perry scheme (1970).

Another group of researchers since Perry (1970) studied how epistemic assumptions influence thinking and reasoning processes, specifically focusing on reflective judgment (King & Kitchener, 1994; Kitchener & King, 1981; Kitchener, King, Wood, & Davison, 1989; Kitchener, Lynch, Fischer, & Wood, 1993) and skills of argumentation (Kuhn, 1991, 1993).

Reflective Judgment Model

King & Kitchener (1994) developed their Reflective Judgment Model based on research (Churchman, 1971; Kitchener, 1983; Wood, 1983) that suggested advanced levels of cognitive processing are required to solve ill structured problems, i.e., problems about which "reasonable people reasonably disagree" (King & Kitchener, 2001, p. 37). These problems cannot be solved by simple formulae. They require critical thinking and choices based on evidence and reason. For example,

> citizens are asked to vote on ballot issues such as whether the benefits of spraying for mosquitoes outweighs the health risks, whether a proposed urban growth policy will protect farm land while spurring economic development, and the

> degree to which a culture of violence and availability of guns contributes to tragedies such as school shootings by teenage boys (King & Kitchener, 2001, p. 37).

Intelligent and conscientious people hold differing views about how to solve such difficult problems. Kitchener (1983) proposed a three-level cognitive processing model, including *cognition, metacognition, and epistemic cognition.* She asserted that the third and most advanced level of cognitive processing, epistemic cognition, where individuals consider "the limits of knowing, the certainty of knowing, and the criteria for knowing" (p. 222) was necessary to solve these ill-structured problems.

King & Kitchener (1994) argued that epistemic cognition was the underpinning of critical thinking, or what they called *reflective judgment* (p. 13). They proposed a developmental model of reflective thinking which includes seven sequential assumptions about the process of knowing (i.e., one's view of knowledge) and how knowledge is acquired (i.e., one's justification of beliefs), which can be summarized in three broad periods: (a) *Prereflective* (Stages 1-3), characterized by the assumptions that (1) knowledge comes from authority figures or through firsthand observation rather than through the weighing of evidence, (2) their own knowledge is absolutely correct, and (3) they are completely certain about their knowledge. "People who hold these assumptions treat all problems as though they were well-structured (defined completely and resolved with certainty)" (King & Kitchener, 2001, p. 39), (b) *Quasi-reflective* (Stages 4 and 5) characterized by epistemic assumptions that conclude aspects of knowledge are uncertain due to missing information or methods of observing evidence. In other words, while they use evidence, they don't understand how evidence relates to a conclusion, and

(c) *Reflective* (Stages 6 and 7), characterized by the assumption that while knowledge claims cannot be made with absolute certainty, one makes the best choices one can, based on one's evaluation of the available evidence. At this stage people are willing to reevaluate the appropriateness of their choices as new evidence becomes available. Again, similar to the original Perry scheme and the previously described developmental models of personal epistemology, a developmental progression from less complex to more complex ways of conceptualizing the world are posited by King & Kitchener (1994, 2001).

Argumentative Reasoning Model

Deanna Kuhn's (1991) research was similar to King & Kitchener's (1994) in that she studied how people respond to every day, ill-structured problems that do not have clear or easy solutions. She proposed that epistemic thinking required argumentative reasoning. Kuhn identified three classic social problems as the basis for her interviews. Subjects were asked to explain: (a) What causes prisoners to return to crime after they're released?, (b) What causes children to fail in school?, and (c) What causes unemployment? (Kuhn, 1991)

Participants were asked to explain their view, and to justify their position with evidence. Subjects were also asked to create an opposing view, provide a rebuttal to that view, and then offer a solution to the problem. At the end of the interview, participants were asked for epistemological reflection on the argumentative reasoning used. Kuhn (Kuhn, 1991; Kuhn & Weinstock, 2001) reported that her research results are similar to what Perry (1970), Belenky, et al., (1986), Kitchener & King (1994), and Baxter

Magolda (1987) had found. She described three categories of epistemological thinking: (a) *Absolutist*, who experience knowledge as certain and absolute, emphasize facts and expertise as the foundation for knowing, and express soaring confidence in their own beliefs, (b) *Multiplist*, who are more skeptical about certainty and expertise in general, and who may think that all perspectives have equal legitimacy, with one's own view being as valid as that of the expert, and (c) *Evaluative*, a view which also denies the prospect of certain knowledge, but recognizes expertise and appreciates that different perspectives can be compared and evaluated based on their merits. Genuine interchange is possible among those with different views, with learning as a possible outcome. Kuhn suggests that argumentative reasoning is the basis of this process, which can influence others' thinking. Kuhn's primary contribution to the literature is connecting epistemology to reasoning, as utilized in skilled argumentation.

Each of these models, regardless of the assumptions and terms used, posits a broad developmental sequence with positions ranging from a dualistic, objectivistic view of knowledge to a more subjective, relativistic way of knowing, and ultimately to a contextual, constructed epistemological perspective, consistent with Perry's observations (Hofer, 2001).

The next section will present Marlene Schommer's (1990) conceptualization of epistemology as a system of more or less independent beliefs as distinct from a developmental sequence.

Epistemological Beliefs System

So far in this paper, two lines of research in personal epistemology have been presented: how individuals interpret their educational experiences, and how epistemology influences thinking and reasoning. A third line of research challenges the developmental nature of the construct, conceptualizing personal epistemology as a system of independent *beliefs* or *attitudes* that are not organized into stages or sequences (Ryan, 1984a, 1984b; Schommer, 1990, 1994a) and do not necessarily mature "in synchrony" (Schommer-Aikins, 2001, p. 106).

The focus of the early researchers in this group was on the relationship between epistemological beliefs and aspects of learning. As an example of this line of research, Dweck & Bempechat (1983) found that children who believe that the ability to learn is fixed at birth tend to give up when faced with a difficult academic task. On the other hand, children who believe the ability to learn improves with time stand up to a challenge and try different paths to learning and accomplishment. As another example, Schoenfeld (1985) found that high school students who believe that math knowledge is handed down by authority and should be able to be solved quickly tend to have poor problem-solving skills. According to this group, *epistemological beliefs* may imply a personal conviction, an unverified opinion or an unexamined assumption rather than a reasoned cognitive conclusion.

In 1990, Schommer began testing the conceptualization of personal epistemology as a system of more or less independent beliefs (Schommer, 1990). Those beliefs included: (a) *certainty* or *stability* of knowledge (from unchanging to tentative), which she called *Certain Knowledge* (CK) (b) *structure* of knowledge (from isolated bits to

integrated concepts), called *Simple Knowledge* (SK) (c) *source* of knowledge (from handed down by authority to gleaned from observation and reason), called *Omniscient Authority* (OA) (d) *speed* of knowledge acquisition (from quick all-or-nothing learning to gradual learning), called *Quick* Learning (QL), and (e) *control* of knowledge acquisition (from fixed at birth to life-long improvement), called *Innate Ability* (IA) (Schommer-Aikens, 2001). Her first three dimensions were traced conceptually from Perry's (1970) work, and the last two from Schoenfeld's (1983, 1985, 1988) work on beliefs about mathematics and Dweck & Bempecht's (1983) research on beliefs about learning.

Schommer's (1990) work was more quantitative than her predecessors' and was the first to challenge the idea that epistemological beliefs develop in sequential stages. Her review of conflicting results of research, which attempted to connect Perry's scheme to metacomprehension (Ryan, 1984b) led her to this challenge.

In 1994 Schommer published a theoretical framework of her epistemological belief system, and then summarized it in seven points in 2001 (Schommer-Aikens, 2001). The essence of her summary suggested:

1. Personal epistemology may be conceptualized as a system of multiple beliefs as distinct from a single belief.
2. These epistemic beliefs are more or less independent, meaning it cannot be assumed that they mature together all at the same speed or level. She posited that a person may believe in complex knowledge (considered a more "mature" belief, p. 106) while at the same time believing in unchanging knowledge (considered a less "mature" belief, p. 106). She took the position

that these beliefs may or may not grow in synchrony. Instead, development in any one belief in the system must be determined on a case-by-case basis.

3. Epistemological beliefs are better characterized as frequency distributions than dichotomies or continuums. Schommer suggested it is likely that a mature learner believes a small percentage of knowledge is unchanging and a substantial percentage of knowledge is evolving.
4. Epistemological beliefs have both indirect and direct effects. An indirect effect, for example, would be the role of epistemological beliefs in mediating learning. Specifically, if one believes that knowledge is a collection of isolated bits, learning means being able to recall a list of facts. Memorizing becomes the study strategy which results in an impoverished mental representation of the content which ultimately leads to inert knowledge. An example of a direct effect is when one holds a strong belief in certain knowledge which serves as a filter for interpreting tentative text as if it were definitive.
5. Epistemological beliefs may vary for any individual over time. Most work on personal epistemology has presumed that people's epistemic beliefs are "domain general" (Hofer, 2000; Hofer & Pintrich, 1997), meaning their epistemic beliefs are general and transcend domains, such as academic major or work discipline. But a growing body of research (Donald, 1990; Hofer, 2000; Langer, 1994; Roth & Roychoudhury, 1994; Schoenfeld, 1992; Stodolsky, Salk, & Glaessner, 1991) has suggested that beliefs may be "domain specific," meaning people may hold different epistemic beliefs about

specific domains. For example, Hofer (2000) found that 1st-year college students saw knowledge in science as more certain and unchanging than knowledge in psychology; they also viewed authority and expertise as the source of knowledge more in science than in psychology.

6. Epistemological beliefs develop and change over time, largely influenced by experiences including engaging in problem solving, learning from family and friends, formal education and life experiences.
7. Epistemological beliefs, as difficult as they may be to conceive and measure, are too important to ignore (Schommer-Aikens, 2001, p. 106-107).

In order to assess the five dimensions of her epistemic belief system, Schommer (1990) developed the paper-and-pencil instrument *Epistemology Questionnaire (EQ)* using 63 short statements. Each item was stated from a naïve (or less complex, less sophisticated) epistemological perspective (e.g., "People should always obey the law.") To provide predictive validity, Schommer (1990) also asked them to read a passage, write a concluding paragraph, complete a passage content test, and rate their confidence in their understanding of the passage.

> Regression analyses indicated that the more students believed in quick learning, the more likely they were to write over-simplified conclusions, perform poorly on the content test, and be overconfident in their understanding of the material. The more students believed in certain knowledge, the more likely they were to write definitive conclusions for tentative passages (Schommer-Aikins, 2001, p. 105).

These findings were later replicated with samples of college students (Schommer, Crouse, & Rhodes, 1992) and high school students (Schommer, 1993b).

However, factor analysis of Schommer's data yielded only four factors (all but the Omniscient Authority factor), possibly due in retrospect to using 12 subsets of her 63 short statements as variables rather than the items themselves (Hofer, 1997; Schraw, Bendixen, & Dunkle, 2001). This failure was significant considering the amount of research which postulated a relationship between beliefs about authority and skilled reasoning (Curtis, Billingslea, & Wilson, 1988; Damon, 1988; Jehng, Johnson, & Anderson, 1993; Perry, 1970; Presley, 1985).

Several researchers (Bendixen, Schraw, & Dunkle, 1998; Jehng, Johnson, & Anderson, 1993; Qian & Alvermann, 1995; Schraw, Dunkle, & Bendixen, 1995) revised Schommer's (1990) questionnaire. Factor analysis of the revised questionnaires yielded all five factors. Schraw, et al (2001) revised the EQ into what has become the *Epistemic Beliefs Inventory (EBI)* (see Appendix 3), providing additional factor analytic evidence for validity of Schommer's original five-factor model.

Schommer's model as measured by the EBI has been frequently used in dissertations on personal epistemology in recent years (Hofer, 1997; Huglin, 2003; Johnson, 2002; McLeod, 2002; Radigan, 2002). The EBI based on Schommer's five-factor model has been utilized in research because (a) several researchers in the field of personal epistemology prefer to explore epistemic beliefs from a model which does not presume developmental stages, (b) measuring epistemic beliefs in a questionnaire format is an attractive and expedient alternative to interviews. This format makes it possible to pursue studies that identify correlations between beliefs about knowledge and other cognitive processes, and (c) significant psychometric work has been done using the *EBI.* This psychometric research has contributed to the validity and reliability of the EBI as an

assessment tool. Therefore, because of this research, the EBI has established respectable psychometric properties and has become a primary instrument to measure personal epistemology.

Assessing Personal Epistemology in This Study

Schommer's (1990) model of epistemic beliefs has been especially popular in measuring comprehension and cognition for academic tasks and classroom learning (Hofer, 1997). The relationship between a supervisor and a counselor often begins in an academic setting and involves comprehension and cognition, with learning as an important dimension. The proposed participants in this study will be graduate students in an academic setting. Schommer's (1990) model was selected for this research (a) to utilize a model which does not presume developmental stages between the factors. The notion of personal epistemology as a system of independent beliefs as distinct from developmental stages is a model being used by leading edge researchers in the field (Hofer, 2000, 2001; Hofer & Pintrich, 1997, 2001; Schommer-Aikins, 2001), (b) to use an expedient and reliable measure to identify correlations between epistemic beliefs and other measures of cognitive processes such as working alliance, and c) to use a measure respected for its psychometric properties among researchers of personal epistemology.

In addition to these reasons, recent research in personal epistemology has focused on assessing the role of epistemological beliefs within the larger construct of cognition (Hofer & Pintrich, 1997; Schommer-Aikins, 2001). Specifically, researchers are studying the idea of a system of epistemological beliefs that exist in their own lines of research (Hall, Chiarello, & Edmonson, 1996; Kardash & Scholes, 1996; Schommer-Aikins, 2001;

Winne, 1995). My dissertation attempts to further this research by studying epistemological beliefs in situ of the working alliance that exists between supervisors and counselors-in-training.

Critique of Schommer's Model

Schommer's (1990) model has not been without its challengers. There have been questions about a) whether a continuum of epistemic beliefs can be measured by degrees of agreement with extreme positions, b) whether these dimensions actually are independent and whether there may be some covariance among dimensions (Hofer & Pintrich, 1997), and c) whether researchers have arrived at an exhaustive yet concise set of epistemic beliefs.

The dimensions most debated on Schommer's (1990) EQ were Omniscient Authority and Innate (or Fixed) Ability (Hofer & Pintrich, 1997; Schraw, Bendixen, & Dunkle, 2001). Schraw, Bendixen and Dunkle (2001) attempted to address these challenges by developing the EBI to more reliably measure Schommer's (1990) model of five epistemic beliefs and by conducting a validation study of both the EQ and the EBI. Their findings (described in more detail in Chapter Three) suggest that the EBI adequately measures Schommer's (1990) five hypothesized epistemic dimensions including Omniscient Authority and Innate Ability, each of the factors is conceptually distinct, and all of the items that loaded on individual factors were related logically to the relevant construct (Schraw, Bendixen, & Dunkle, 2001). These findings contribute to my choice to use the EBI to measure personal epistemology in this study.

So far I have reviewed a history of personal epistemology with its six major models, and focused on Schommer's (1990) Epistemological Beliefs System as the model of choice for this study. We now turn our attention to the significant problem of construct definition.

Definition of the Construct

While personal epistemology has been studied for over 50 years, the field is still in its infancy. Currently the key researchers in the area (Hofer & Pintrich, 1997, 2001) have called for clarification in labels, definitions and constructs. One of the key questions researchers face is the definition of the construct of personal epistemology (Hofer, 2001; Hofer & Pintrich, 1997; Kuhn & Weinstock, 2001; Pintrich, 2001). Different terms are used by researchers to describe personal epistemology, including epistemic positions, epistemological development and assumptions (Perry, 1970), epistemological standards or attitudes (Ryan, 1984a, 1984b), ways of knowing (Belenky, Clinchy, Goldberger, & Tarule, 1986), epistemological beliefs (Schommer, 1990), epistemological views, argumentative reasoning and skills (Kuhn, 1991), epistemological reflection (Baxter Magolda, 1992), reflective judgment and inductive reasoning (King & Kitchener, 1994), epistemological thinking, epistemological theories, and epistemological resources or repertoires (Pintrich, 2001). The diversity of terms suggests that researchers may not be defining the construct in the same way or measuring the same construct (Hofer & Pintrich, 1997). In order to

proceed, the definition of the construct of personal epistemology must be clarified.

Hofer & Pintrich (1997) listed three main construct definition issues. First, different labels reflect different theoretical assumptions about the construct, as can be seen in the last section. Second, researchers differ on the boundaries of the construct in terms of what to include and exclude. Third, the nature of the relationship between epistemological thinking and general thinking and reasoning differs among models. Each of these three issues is discussed in more detail below.

With regard to the first issue, each model in personal epistemology describes the construct using different labels, different theoretical assumptions about the construct's nature and function, and different sequences (Hofer & Pintrich, 1997). Researchers view the construct as either (a) a cognitive developmental structure, (b) a cognitive process itself, or (c) a set of beliefs, assumptions or attitudes that affect cognitive processes. Perry (1981) and King & Kitchener (1994) use the terms *epistemological development* and *epistemological assumptions*, respectively, to describe logically sequenced cognitive developmental structures, with sequences that are connected and not orthogonal. Belenky, et al's, (1986) *ways of knowing* and Baxter Magolda's (1992) *epistemic reflection* also posit a cognitive developmental structure. Researchers in this developmental epistemological group often utilized qualitative and longitudinal methods to obtain their findings. Each of the models in this group, regardless of the assumptions and terms used, posit a broad developmental sequence with positions ranging from a dualistic, objectivistic view of knowledge to a more subjective, relativistic way of

knowing, and ultimately to a contextual, constructed epistemological perspective, consistent with Perry's observations (Hofer, 2001).

Alternatively, Kuhn's (1991) *argumentation skills* and King & Kitchener's (1994) *inductive reasoning* about ill-structured problems view the construct of personal epistemology as general thinking and reasoning processes. They see the construct of personal epistemology as a cognitive process.

Finally, Ryan's (1984a, 1984b) *epistemological standards* or *attitudes* and Schommer's (1994b) *epistemological beliefs* are not organized into stages, may be unwitting opinions rather than reasoned cognitive structures, do not necessarily mature together, and can be orthogonal. Different labels, then, reflect different theoretical assumptions about the construct. Table 1 illustrates the major developmental models, their labels and stages. Positions are aligned to indicate similarity across the models.

The second definitional issue important to researchers in this field pertains to what content should be included in the construct. Pintrich (2001) suggested that the most important future challenge in the field of personal epistemology was to define: "what should be considered the core or essence of personal epistemology, and what should be left out of the definition or considered as related but distinct constructs" (p. 390). In an effort to promote conceptual clarity, Hofer & Pintrich (1997) proposed to limit the domain of epistemological beliefs to "individuals' beliefs about knowledge as well as reasoning and justification processes regarding knowledge" (p. 116). This would exclude beliefs about learning, intelligence or teaching as central components of epistemological beliefs.

Hofer & Pintrich (2001) followed up on their proposal by "attempting to develop a consensus position" on the nature of the construct, specifically that "personal epistemology concerns an individual's cognitions about the nature of knowledge and the nature of knowing" (Pintrich, 2001, p. 390). Their position is further defined by proposing four core or essential dimensions, including cognitions and beliefs about the *certainty* of knowledge (from dualistic to multiplist to relativist views), the *simplicity* of knowledge (from simple and concrete to complex and contextual), the *source* of knowledge (from handed down by authorities to gleaned from observation and reason), and *justifications* for knowing (from needing little evidence to needing much evidence for making knowledge claims). Aspects of these four dimensions are evident in each of the major models, as seen in Table 2. There is still disagreement regarding how "essential" each of the dimensions is, whether four is the appropriate number of essential dimensions, and whether personal epistemology is best described as cognitions, beliefs, attitudes, assumptions, ways of thinking or reasoning skills. However, there is a consensus that personal epistemology concerns an individual's cognitions about the nature of knowledge and the nature of knowing (Pintrich, 2001).

By including beliefs about the nature of knowledge and the nature of knowing in their proposed construct definition, Hofer & Pintrich (1997, 2001) excluded the dissenting voices to this "consensual position" (Pintrich, 2001, p. 390) who also see in the construct "an individual's cognitions and beliefs about the nature of learning, intelligence, instruction, classrooms, domain-specific beliefs about disciplines, and beliefs about the self" (Pintrich, 2001, p. 391). It remains to be seen if the field will follow Hofer & Pintrich's (1997, 2001) recommendations. However, I see value in

Table 1

Models of Epistemological Development in Late Adolescence and Adulthood

The Perry Scheme (Perry, 1970)	Women's Ways of Knowing (Belenky et al, 1986)	Epistemological Reflection (Baxter Magolda, 1992)	Reflective Judgment (King & Kitchener, 1994)	Argumentative Reasoning (Kuhn, 1991)
Positions	*Epistemological perspectives*	*Ways of knowing*	*Reflective judgment stages*	*Epistemological views*
Dualism	Silence Received knowledge	Absolute knowing	Pre-reflective thinking	Absolutists
Multiplicity	Subjective knowledge	Transitional knowing		Multiiplists
			Quasi-reflective thinking	
Relativism	Procedural Knowledge (a) Connected knowing (b) Separate knowing	Independent knowing		Evaluatists
Commitment within Relativism	Constructed knowledge	Contextual knowing	Reflective thinking	

Note: Stages and positions are aligned to indicate similarity across the five models
Source: Hofer & Pintrich, 1997, p. 92

clarifying the construct in this way, limiting personal epistemology to beliefs about the nature of knowledge and the nature of knowing, and, therefore, have conducted this study in harmony with Hofer & Pintrich's (1997, 2001) proposal.

The third potential confound in the definition of the construct involves the difference between assumptions about the process of knowing versus the processes of general thinking and reasoning, such as argumentation skills (Kuhn, 1991) and reasoning

Table 2

Core Dimensions from Existing Models of Epistemological Beliefs and Thinking

	Researchers					
Core Dimensions	Perry	Belenky	Baxter M	K&K	Kuhn	S
		Nature of Knowledge				
Simplicity of Knowledge				x		x
Certainty of Knowledge	x		x	x	x	x
		Nature of Knowing				
Source of Knowledge	x	x	x	x	x	x
Justification for Knowing			x	x	x	

Note: Baxter M = Baxter Magolda; K & K = King & Kitchener; S = Schommer
Source: Hofer & Pintrich (1997), pp. 113-115

about ill-structured problems (King & Kitchener, 1994). While these thinking and reasoning processes bring out epistemological assumptions, they can be separated conceptually. The processes of knowing (i.e., beliefs about the *source* of knowledge and the *justification* of knowledge) are generally assumed to be higher-order cognitive processes than either inductive reasoning or general critical thinking. Hofer & Pintrich (1997) propose that future research maintain the distinction between these two processes.

I affirm Hofer & Pintrich's (1997, 2001) boundary proposals to limit the construct definition of personal epistemology to two core dimensions, and to differentiate between the nature of knowing and the general skills of argumentation and solving ill-structured problems, as listed above.

The Role of Age, Education and Gender on Epistemic Beliefs

Several previous studies have found positive relationships among age, education, and the sophistication of epistemic beliefs (Benack & Basseches, 1989; Perry, 1970; Schommer, 1990, 1993b; Walker, Rowland, & Boyes, 1991). The role of gender has been explored by a variety of researchers (Baxter Magolda, 1992; Belenky, Clinchy, Goldberger, & Tarule, 1986; King & Kitchener, 1994), but with inconclusive evidence. Perry (1970), whose subjects were almost entirely male, constructed the Perry scheme. In response, Belenky et al (1986) chose to use an all-female sample for their research, suggesting that women's "ways of knowing" (p. xiii) didn't always fit into the Perry scheme. Their work has yet to be replicated with a mixed-gender sample. Baxter Magolda (1992) utilized both men and women in her sample of college students, and found results similar for men and women, but also found gender-related patterns in their

ways of knowing. King & Kitchener (1994) found gender differences only in the later testings in their 10-year study, suggesting the differences may have been attributable to greater educational attainment by the men. They also report that of 14 other studies using the Reflective Judgment Interview, six of the studies reported higher epistemic scores among men. While the issues of age, education and gender need more focused investigation than this study can provide, it is important to include these social and personal variables in the research questions, given the nature of previous findings.

This concludes the section on personal epistemology, the first variable in this study. In the next section, the second variable, supervisory relationship, will be described and the potential role of personal epistemology as an influence on that relationship will be explored.

The Influence of Individual Differences in the Supervisory Relationship

A positive and productive relationship is essential to successful supervision in mental health counseling (Ronnestad & Skovholt, 1993; Worthen & McNeill, 1996). In order to become an effective supervisor, one must understand relationship variables that impact others and be skilled enough to establish a productive supervisory relationship (Borders et al., 1991). The supervision literature describes a number of individual, cultural and developmental differences which influence the supervisory relationship (Bernard & Goodyear, 2004). Individual differences refer to personal characteristics such as personality, cognitive-learning style, cognitive complexity, cognitive development, experience level, and cultural identity. This section will specifically review the literature on (a) the role of cognitive complexity and related personal characteristics

which have been found to affect supervision, (b) the definition and value of a working alliance between supervisors and supervisees, (c) the impact of the assumptive world on supervisory behavior, and (d) the personal characteristics supervisors and/or supervisees which have been researched to date that predict supervisory working alliance.

Cognitive Complexity Correlates With Counseling and Supervision Competencies

Cognitive complexity has been defined as the degree of cognitive differentiation or the number of interpersonal constructs a person can use to define social reality (Crockett, 1965; Kelly, 1955). Kelly (1955) described these constructs as templates used to describe life experiences. Cognitive complexity is assumed to be directly related to the number of constructs an individual uses when conceptualizing the personalities and enduring behaviors of others (Duys & Hedstrom, 2000).

There is ample evidence in the supervision literature that counselor trainees with high cognitive complexity are more capable of many of the tasks of counseling (Bernard & Goodyear, 2004). High cognitive complexity correlates with such skills as increased empathy and less prejudice (Stoppard & Miller, 1985), more refined descriptions of client characteristics (Borders, 1989), more parsimonious case conceptualizations (J. M. Martin, Slemon, Hiebert, Hallberg, & Cummings, 1989), and a greater capacity to stay focused on counseling and less focused on personal needs (Birk & Mahalik, 1996). Supervisees with underdeveloped cognitive complexity tend to need more help from their supervisors in setting goals, selecting strategies and forming cognitive maps of their client's issues. Supervisors who challenge such supervisees in highly abstract ways often find their efforts less than productive. Supervisees with high cognitive complexity tend to weigh

more options, choose more appropriate interventions, appear more confident, ask for more feedback to improve their skills and seem less threatened by evaluation (Bernard & Goodyear, 2004; Gordon, 1990; Holloway & Wampold, 1986). So, the literature is clear that cognitive complexity is correlated with competencies that are important to successful counseling.

Cognitive complexity is related to cognitive development. Historically the mental health profession assumed that education, training and supervision triggered cognitive development in students, which resulted in cognitive complexity by the end of the training program (Bernard & Goodyear, 2004). Recent studies (Fong, Borders, Ethington, & Pitts, 1997; Granello, 2002; Lovell, 1999; Stein & Lambert, 1995) have not affirmed this notion. While training does result in cognitive development, such development does not necessarily correlate with cognitive complexity. While it seems clear that high cognitive complexity plays a significant role in accelerating cognitive development and is an advantage to a counselor, it is not clear that cognitive development correlates solely with increased cognitive complexity. While both are related to success in counseling, the exact relationship between them is unknown at this time (Bernard & Goodyear, 2004).

One of the measures of cognitive development used among graduate students in general (Mines, King, Hood, & Wood, 1990; Simpson, Dalgaard, & O'Brien, 1986) and graduate counseling students in particular (Granello, 2002) has been personal epistemology. Researchers (Granello, 2002; McAuliffe & Lovell, 2006) used the Learning Environment Preferences (W. S. Moore, 1989) to assess the cognitive development of graduate students, based on Perry's (1970) model. They found evidence

that students began their graduate study at lower levels of cognitive development and progressed through Perry's (1970) stages.

Students with lower levels of cognitive complexity, cognitive development or personal epistemology tend to come to over-simplified conclusions and be overconfident in their understanding (Bernard & Goodyear, 2004; Granello, 2002; McAuliffe & Lovell, 2006). Those who view the world through a dualistic lens of right and wrong, who see truth as something simple that others should be able to see, who are certain they are in possession of objective truth, or who derive their convictions of rightness from authorities outside themselves would seem more likely to do harm than those with a more complex epistemological belief system. That is, a potential to harm seems more likely to occur when counselors manifest dualistic epistemological beliefs in a world of clients wrestling with such pluralistic choices as divorce, affairs, abortion, gender identity, atheism, agnosticism, fundamentalism, evangelicalism, deception, sexual promiscuity, cohabitation, gender egalitarianism, and a host of other challenging presenting dilemmas that cannot easily be accommodated by a dualistic style of thinking. Therapeutic alliance would seem less likely to occur between counselors and clients when either one or both parties embrace dualistic epistemological beliefs as they attempt to work together. Complex epistemological beliefs would seem to be a key characteristic of supervisees who value the ethic "counselors act to avoid harming their clients…" (American Counseling Association, 2005, p. 4)

Counseling processes have a number of similarities to supervisory processes (Bernard & Goodyear, 2004). Both help others examine aspects of their problematic behaviors, thoughts and feelings. Both have the purpose of imparting new skills and

knowledge. Both are evaluative. Perhaps the most central similarity is the role of the interpersonal relationship (Bernard & Goodyear, 2004). These processes are directly affected by cognitive complexity or personal epistemology, as seen above. Therefore, there is a high likelihood that personal epistemology is highly relevant to supervisory processes, including the positive and productive relationship between supervisor and supervisee (Bernard & Goodyear, 2004). Ironically, however, this theoretically intuitive notion has never been subjected to empirical investigation.

Working Alliance Between Supervisee and Supervisor

One of the most widely used constructs used to measure the working relationship among supervisees and supervisors is working alliance. The therapeutic or working alliance is widely believed to be critical for success in all types of supervision (Bernard & Goodyear, 2004; E. S. Bordin, 1983) and psychotherapy (Safran & Muran, 2000). Since personal epistemology is correlated to the skills used in effective counseling and supervision, and a productive working alliance results from the use of those skills, it follows that personal epistemology will be positively correlated with working alliance among counselors and their supervisors. Again, though, this theoretically intuitive conclusion has not been subjected to empirical investigation.

A popular definition of the therapeutic alliance (Andrusyna, Tang, DeRubeis, & Luborsky, 2001) is that proposed by Bordin (E. S. Bordin, 1975, 1979, 1980, 1983; H. Bordin, 1994). While psychodynamic theorists conceptualized the initial notions of working alliance (Greenson, 1967), Bordin's (1979) model has increasingly been accepted as a pantheoretical construct (Bernard & Goodyear, 2004) to include all change-

inducing relationships (Horvath & Greenberg, 1989). The relationship that exists between supervisors and supervisees is intended to be a change-inducing relationship. Bordin (1979) suggested that the working alliance is a "collaboration to change" (p. 73), and consists of three related components: 1) the client and therapist agreement on *Goals* of treatment, 2) the client and therapist agreement on the *Tasks* necessary to reach those goals, and 3) the development of a personal *Bond* between the client and therapist.

One can imagine the challenges that are likely to exist between supervisor and supervisee with different personal epistemologies regarding goals, tasks and bonds. A supervisor with a "my-way-or-the-highway" dualistic epistemology would probably seem too dogmatic or simplistic to a supervisee with a more complex epistemology. Alternatively, a supervisee with a less developed epistemology would likely have trouble with the "wishy-washy" (ambiguous, tentative) relativism of a supervisor with a more developed personal epistemology. It is reasonable, therefore, to hypothesize that the bond between supervisee and supervisor would suffer where personal epistemologies are significantly different.

Research on working alliance was facilitated by the development of instruments to measure it. Based on Bordin's (1979) theory, Horvath & Greenberg (1989) developed the Working Alliance Inventory (WAI), which has become the best known measure of the therapeutic alliance (Bernard & Goodyear, 2004; D. J. Martin, Garske, & Davis, 2000). Bordin (1983) later used his working alliance model to conceptualize the relationships between supervisor and supervisee. Baker (1990) updated the Working Alliance Inventory (WAI) to address the supervisory working alliance, as theorized by Bordin (see Appendix 9). Efstation, Patton, and Kardash (1990) developed an alliance

measure specific to supervision, the Supervisory Working Alliance Inventory (see Appendix 10). A more detailed discussion of these instruments is presented in Chapter Three.

Supervisor Behavior Affected by Assumptive World

Friendlander and Ward (1984) suggested that supervisor behavior is affected by a number of determinants, beginning with one's *assumptive world* (i.e., the person's assumptions based on past professional and life experience, training, values and general outlook on life). Their model posits that one's assumptive world influences choice of *theoretical orientation* (e.g., behavioral, psychoanalytic, eclectic., etc.), which influences choice of *style* or *role*, which determines *strategy-focus*, which influences *format* (or *method*: e.g., live supervision or group supervision), which influences the *techniques* utilized. Each of these hypothesized determinants of one's assumptive world is a personal characteristic of the individual (Bernard & Goodyear, 2004).

The assumptions one makes about knowledge and knowing are, quite obviously, significant aspects of one's assumptive world. It is reasonable to presume that a supervisee who assumes knowledge is dualistic would be prone to arrive at over-simplified conclusions, be overconfident in understanding, have poor comprehension, have limitations in critical thinking and evaluative judgment in complex cases, and have difficulties with a supervisor who assumes knowledge is complex and tentative. One might imagine the angst of the supervisor attempting to work with such a supervisee. One might imagine the angst of the supervisee whose dualistic supervisor is

overconfident or over-dogmatic or whose observations are "correct because I said so," and the impact on their working alliance.

Personal Characteristics Predict Supervisory Working Alliance

Recent researchers of the supervisory working alliance found that various personal characteristics of supervisors and/or supervisees were predictive of supervisees' and supervisors' perceptions of the supervisory working alliance. Epps (2000) studied the effect of attachment styles on the working alliance in counselor supervision, and found that securely attached supervisees perceived a stronger bond with their supervisors than insecurely attached supervisees, regardless of the attachment style of the supervisor. White (2000) researched the contribution of supervisor and supervisee personal well-being characteristics to the supervisory working alliance. Supervisors' characteristics were predictive of the supervisees' and supervisors' perceptions of the relationship. Delaney (1995) studied the effect of optimism-pessimism on the supervisory working alliance. Supervisor optimism correlated significantly with the supervisor's assessment of the supervisory working alliance but not with the supervisee's working alliance or optimism scores. Ladany & Lehrman-Waterman (1999) found that supervisor self-disclosures were related to the supervisory working alliance. Olson (1995) studied the relationship between supervisors' facilitative characteristics and students' willingness to learn and receptivity in supervision. Pearson product-moment correlations indicated positive associations between supervisor characteristics of empathic understanding and willingness to be known with students' engagement in supervision and supervisory impact. These studies suggest that significant personal characteristics of supervisors and

supervisees have an impact on their respective perceptions of supervisory working alliance.

It seems evident that epistemic beliefs are significant personal characteristics of supervisors and supervisees. Yet, no research has investigated the contribution of personal epistemology to the supervisory working alliance. Now that the field has credible instruments to measure both constructs, it seems an opportune time to measure and explore the relationship that exists between them.

Research Questions and Hypotheses

As mentioned in Chapter One, this dissertation is intended to examine the ability of epistemic beliefs to predict both supervisors' and supervisees' perceptions of the supervisory working alliance. Several research questions are presented:

1. What is the influence of personal epistemology on Working Alliance?
    - (A) What is the influence of *supervisee* epistemology on Working Alliance?
        - (1) Does supervisee epistemology predict relationship success, defined as supervisee composite score on WAI?
        - (2) Does supervisee epistemology predict relationship success, defined as supervisor composite score on WAI?
        - (3) Does supervisee epistemology predict relationship success, defined as the sum of supervisor and supervisee composite scores on WAI?
    - (B) What is the influence of *supervisor* epistemology on Working Alliance?
        - (1) Does supervisor epistemology predict relationship success, defined as supervisee composite score on WAI?

(2) Does supervisor epistemology predict relationship success, defined as supervisor composite score on WAI?

(3) Does supervisor epistemology predict relationship success, defined as the sum of supervisor and supervisee composite scores on WAI?

2. Does personal epistemology influence working alliance after controlling for age, education and gender?

(A) Does supervisee gender, age, or education have an influence on supervisee personal epistemology as they predict relationship success, defined as supervisee or supervisor composite scores on WAI?

(B) Does supervisor age, education or gender have an influence on supervisor epistemology as they predict relationship success, defined as supervisee or supervisor composite score on WAI?

3. Are there significant interactions between predictors?

(A) Is there a significant interaction of supervisor epistemology on supervisee epistemology as they impact relationship success, defined as supervisor composite score on WAI?

(B) Is there a significant interaction of supervisee epistemology on supervisor epistemology as they impact relationship success, defined as supervisee composite score on WAI?

4. What is the relationship between supervisee and supervisor perceptions of the Working Alliance?

Based on the above questions, I hypothesize:

1. Level of personal epistemology will be positively correlated with the strength of the working alliance. Low scores (indicating epistemic complexity) on the Epistemic Belief Inventory (EBI) among supervisor and supervisee will correlate with high scores (indicating better relationship success) on the Working Alliance Inventory (WAI). This correlation will be significant between (a) supervisee epistemology and supervisee working alliance, (b) supervisee epistemology and supervisor working alliance, (c) supervisee epistemology and the sum of both supervisor and supervisee working alliance, (d) supervisor epistemology and supervisee working alliance, (e) supervisor epistemology and supervisor working alliance, and (f) supervisor epistemology and the sum of both supervisee and supervisor working alliance.
2. Age and education will be positively correlated to level of personal epistemology. Gender differences will not be significantly correlated to personal epistemology. Personal epistemology will correlate with working alliance after controlling for age, education and gender.
3. Supervisor epistemology will moderate the relationship between supervisee epistemology and supervisor working alliance. Similarly, supervisee epistemology will moderate the relationship between supervisor epistemology and supervisee working alliance. Said another way, the importance of one predictor will vary over the range of the other predictor. The working alliance between supervisee and supervisor will be moderated by both of their levels of epistemology. The complex epistemology supervisor will have relationship success with the complex epistemology supervisee, and visa versa. However, the

complex epistemology supervisor's working alliance with supervisee will deteriorate as the supervisee's epistemology becomes more naïve. Similarly, the complex epistemology supervisee's working alliance with supervisor will deteriorate as the supervisor's epistemology becomes more naïve. Low supervisor EBI scores (complex epistemology) and high supervisee EBI scores (naïve epistemology) will correlate positively with low scores for both on the WAI. While the more-complex-epistemology supervisor may be able to kindly attend to the Bond between them, the supervisee's inability or unwillingness to integrate Tasks and Goals at a complex level will be frustrating to both. High supervisor EBI scores (naïve) and low supervisee EBI scores (complex) will correlate with low supervisor WAI scores. While the more-complex-epistemology supervisee may well acquiesce to the supervisor's dualistic Tasks and Goals, it's hard to imagine that a quality Bond would develop.

4. Supervisee Working Alliance will correlate significantly with supervisor Working Alliance.

CHAPTER THREE

METHODS

This study explores the contribution of personal epistemology to supervisory working alliance among mental health supervisors and their supervisees, controlling for age, education and gender.

Participants

Participants were 107 counseling supervision dyads from five different counseling center locations in the upper midwest, ranging from suburban to urban, although the majority (87%) came from one university location. All the subjects in the sample worked in a university practicum setting or a mental health clinic. Surveys were completed from November, 2007 to April, 2008.

Supervisors consisted of 18 (16.8%) male, 89 (83.2%) female; 87 master level, 17 doctoral level. Ages ranged from 27 to 64 years (M=48.16, SD=11.056). Ethnicity included 98 (91.6%) Caucasian, 2 (1.9%) Asian American, 3 (2.8%) African American, 2 (1.9%) Native American and 2 (1.9%) Armenian American. Supervisors held the following licenses: 55 Licensed Professional Counselors, 13 Limited License Professional Counselors, 9 Licensed Masters in Social Work, 7 Licensed Psychologists, 3 Limited License Psychologists, and four undefined. Their years in clinical practice ranged from 0 to 35 years (M=10.42 years, SD=8.7 years), and their years in supervisory experience ranged from 0 to 30 years (M=5.65 years, SD=6.2). Their number of supervision sessions with supervisees numbered a minimum of 5 and a maximum of 150

(M=16.34, SD=24.12). In general, supervisors in this study were experienced licensed professional counselors who happened to be female and Caucasian.

Supervisees consisted of 18 (16.8%) males and 89 (83.2%) females; 82 held a bachelor's degree, 25 held a master's degree. Ages ranged from 22 to 56 years (M=31.52, SD=8.228). Ethnicity included 79 (73.8%) Caucasian, 8 (7.5%) African American, 4 (3.7%) Hispanic American, 3 (2.8%) Asian American, 2 (1.9%) African, 2 (1.9%) Native American, 1 (1%) Mexican, 1 (1%) Slav and 1 (1%) Arab American. There were 97 in a Master's program and 10 in a Doctoral program. Of those in a Master's program, 48 were in their second year and 41 were in the third year in the program. Regarding their academic track, 60 were pursuing a community mental health track and 38 were following a school track. In general, supervisees in this study were students pursuing a masters degree in community counseling who happened to be female and Caucasian.

The majority of supervisees were enrolled in a 48-semester-hour, CACREP-accredited master's program. The counseling centers provided a flow of clients for these supervisees to gain experience in counseling near the end of their master's program. Clients inappropriate for this level of training (e.g., suicidal ideation, active substance abuse and psychosis) were referred elsewhere. Supervisors were generally licensed helping professionals (counselors or psychologists) and/or doctoral students.

A total of 115 supervisees and 115 supervisors completed surveys. Eight supervisees and eight supervisors were not matched to a dyad, so they were removed, leaving a total of 107 dyads.

Participants were required to be supervisees and supervisors in the counseling mental health field. Eighteen aspects of demographic data were collected from each participant to inform the researcher of similarities and differences among them.

Participants were surveyed after a minimum of six weeks of supervision. This age of the supervisory dyad was recommended by the dissertation committee during the proposal review process, a protocol based on experience and theorizing that supervisors and supervisees would have a sense of their working alliance within six weeks. This was not a requirement of the Working Alliance Inventory; indeed, working alliance can be measured at any time. This six-week protocol was established to head off threats to validity had they met only once, for example. I am aware of no standard protocol in the supervision literature that suggests a minimum length of time for the working alliance to develop.

Instruments

Epistemic Beliefs Inventory (EBI)

The EBI (Schraw, Bendixen, & Dunkle, 2001) is a self-report instrument constructed to measure the five epistemic beliefs described by Schommer (1990) including Certain Knowledge (from unchanging to tentative), Simple Knowledge (from isolated bits to integrated concepts), Omniscient Authority (from 'handed down by authority' to 'gleaned from observation and reason'), Quick Learning (from quick, all-or-nothing learning to gradual learning) and Innate Ability (from fixed at birth to life-long improvement). The EBI was intended to upgrade Schommer's 63-item *Epistemology Questionnaire (EQ)*, which was less reliable and failed to report an omniscient authority

factor. It has become one of the most widely used instruments to measure epistemic beliefs in the literature today.

The EBI has a 32-item version used by Bendixen et al (1998), and a 28-item used in a validation study in 2002. G. Schraw (personal communication, June 3, 2005) informed me he gets better results from the earlier 32-item version, though he had no psychometric data comparing the two versions. Each of the 32 items are written as grammatically simple statements with a five-point Likert scale (1 = strongly disagree, 5 = strongly agree), with higher scores indicating more naïve (i.e., less complex) beliefs. Participants make their ratings by circling the number that most closely reflects their agreement with the statement. Coefficient alpha for Certain Knowledge, Simple Knowledge, Omniscient Authority, Quick Learning and Innate Ability reached .63, .66, .65, .60 and .63, respectively. Test-retest correlations for these factors one month later were .81, .64, .66, .66, .62, respectively (Schraw, Bendixen, & Dunkle, 2001). By comparison, the test originators state:

> (a) five factors with eigenvalues greater than one that explained 60% of the total sample variation, (b) item-to-factor loadings in excess of .30 for at least three items on every factor, (c) none of the items with loadings in excess of .30 on one factor loaded on another factor, and (d) each factor was characterized by a marker variable loading in excess of .70 that was indicative of the presumed underlying construct (p. 268).

These findings suggest the EBI adequately measures Schommer's (1990) five hypothesized dimensions of personal epistemology.

Working Alliance Inventory, Revised Edition (WAI)

The WAI (Horvath, 1982; Horvath & Greenberg, 1989) is an instrument that measures the quality of working alliance as theorized by Bordin (1980, 1983) and includes three components: *Tasks* (the in-session cognitions and behaviors that are performed during supervision and perceived by both as relevant and efficacious), *Goals* (the outcomes endorsed and valued by both supervisor and supervisee), and *Bonds* (the complex network of positive personal attachments, including mutual trust, acceptance and confidence) between the supervisor and the supervisee. Bordin's conceptualization of working alliance focuses on collaboration, mutuality and joint purpose between the parties in any helping relationship, including counselor and client, or supervisor and supervisee, independent of theoretical orientation (Bordin, 1983). The WAI consists of 36 seven-point Likert scale items (12 for each of the alliance dimensions), where low scores indicate poor working alliance. Two versions (client and counselor) of the WAI were originally developed, modified by Baker (1990) to include supervisor and supervisee forms for use in supervision research.

Horvath and Greenberg (1989) published their validation studies on the WAI and concluded the reliability of the instrument is adequate, as follows. Based on item homogeneity indices, the client's and counselor's versions had an estimated alpha of .93 and .87, respectively. Strong associations between the WAI and other inventories designed to measure similar traits suggest convergent validity of the WAI scales. Concurrent validity is suggested by a common variance between the alliance dimensions of the WAI, the Counselor Rating Form (CRF) and the Empathy dimension of the Relationship Inventory (RI), in the range of 40% to 52%. Predictive validity is

suggested by significant correlations ($p<.05$) of the WAI composite score, the WAI Task subscale, and the WAI Goal subscale with client-reported outcome as measured by the Client Posttherapy Questionnaire (CPQ; Strupp, Wallach & Wogan, 1964). The WAI is one of the most widely used measures of working alliance in the literature today.

Demographic Survey

I also prepared a Demographic Survey for purposes of this study that provided age, gender, ethnicity, role (supervisor or supervisee), estimated verbal IQ, highest degree and year it was attained, licenses held and the years attained, current year in the counseling program, academic track (school or community mental health), estimated cumulative GPA, academic major in undergraduate degree, years experience in clinical practice, years of supervisory experience, number of supervision sessions in this relationship, and whether or not the supervisors had satisfied legislated state requirements for supervision. This data were used primarily to control for potential threats to validity, including gender, age and level of education.

Procedures

A roster of approximately 100 masters and doctoral level practicum and internship dyads from a university counseling center was compiled to serve as a list of potential participants. After approval by professors, I visited practicum classes to explain the study and collect the data from supervisees. Typically after 15-20 minutes, I walked out of the class with the supervisees' completed surveys. Appointments were scheduled with supervisors to complete their instruments. Where appointments were impractical, I sent them the surveys by mail. Returns were slow the first semester, but with assistance

from the department chair, supervisors became more responsive by the second semester of the study. During the data collection stage, supervisors from other counseling centers in the area offered to participate in the study. After approval from the dissertation committee, these additional dyads were added to the sample.

A Research Participant Consent Form was prepared and approved by the Institutional Review Board, summarizing the study and its potential benefits to the profession, addressing confidentiality and anonymity, describing what participation would entail, and requesting the recipients' participation in the study. Participants were also given an incentive for participation consisting of a $100 raffle for those who returned a raffle entry card separate from their completed data packet (Appendix 10). Data were collected from dyads after six weeks of supervision.

Statistical Analysis

I analyzed the data in four levels, corresponding with my four research questions and four hypotheses. Level One had six steps. Using multiple regression, I explored the relationship between:

(a) supervisee epistemology (certain knowledge, simple knowledge, omniscient authority, innate ability and quick learning EBI scores) and relationship success (defined as the supervisee composite score on the WAI);

(b) supervisee epistemology (certain knowledge, simple knowledge, omniscient authority, innate ability and quick learning EBI scores) on relationship success (defined as the supervisor composite score on the WAI);

(c) supervisee epistemology (certain knowledge, simple knowledge, omniscient authority, innate ability and quick learning EBI scores) on relationship success (defined as the sum of supervisee and supervisor composite scores on the WAI);

(d) supervisor epistemology (certain knowledge, simple knowledge, omniscient authority, innate ability and quick learning EBI scores) on relationship success (defined as supervisee composite scores on the WAI);

(e) supervisor epistemology (certain knowledge, simple knowledge, omniscient authority, innate ability and quick learning EBI scores) on relationship success (defined as supervisor composite score on the WAI);

(f) supervisor epistemology (certain knowledge, simple knowledge, omniscient authority, innate ability and quick learning EBI scores) on relationship success (defined as the sum of supervisee and supervisor composite scores on the WAI).

Level Two identified the influence of gender, age and education on (a) supervisee and (b) supervisor epistemology using path analysis.

Level Three explored the interaction of supervisor and supervisee epistemology as they impacted both supervisor and supervisee reports of working alliance.

Level Four identified the relationship between supervisee working alliance and supervisor working alliance.

CHAPTER FOUR

RESULTS

This chapter reports and summarizes the results of analyses used to evaluate the research questions and hypotheses established in the previous chapters. First, I describe the data screening process and results. Next, I discuss a preliminary analysis with zero-order correlations and descriptive statistics conducted to examine whether basic characteristics of the current data set were comparable to those reported in previous research. Finally, I share the results of the four-stage data analysis, describing the relationship between Personal Epistemology and Supervisory Working Alliance.

Data Screening

Prior to main analyses, I examined all the variables of interest for accuracy of data entry, missing values, the normality of distributions, and univariate outliers. Supervisees and supervisors were matched and verified for accuracy. Eight of each item set had no dyad match and were deleted from the dataset, leaving 107 dyads. The accuracy of the data was first checked by visually comparing the dataset with the original responses from participants. Several typos outside the Likert scale range on the EBI and WAI were corrected. A new variable "In Doctoral Program" was added to the demographic data to differentiate masters and doctoral supervisees and to clarify "Year In Program." These steps screened for accuracy of data entry.

Next, I used frequency tables and histograms to check the accuracy of the data. I examined the normality of the variables on both inventories by assessing skewness and

kurtosis using statistical and graphical methods. The standard error for skewness and kurtosis showed no significant problems with normality on either profile. According to Tabachnick and Fidell (2007), the impact of departure from zero skewness and zero kurtosis diminishes with large samples. Underestimates of variance associated with positive kurtosis disappear with samples of 100 or more cases. Thus, I concluded the datasets were robust to non-normal distributions.

Next I screened for nonrandom patterns in the missing data. After constructing a dummy variable (cases with missing values = 1, cases with nonmissing values = 0), I used an independent sample *t* test to determine if there were significant differences in the mean scores on the demographic data between the two groups (i.e., cases with missing versus cases with non-missing values) for each item on the EBI and WAI (a total of 136 independent sample *t* tests, including 68 *t* tests on EBI & WAI for supervisees and 68 *t* tests on EBI & WAI items for supervisors). With supervisees (N = 107), the maximum number of missing items on any one question on the EBI was three, which happened once. Four questions were missing two values, seven questions were missing one value, and the remaining 20 questions had no missing values. On the WAI, one question was missing three values, three questions were missing two values, and ten questions were missing one value. With supervisors (N = 107) on the EBI, one question was skipped five times, caused by a supervisor missing one question, which I then replicated four more times (to match with his/her supervisees). Another question was missed four times due to the same problem (supervisor completed one inventory which was used for four supervisees). On the supervisors' WAI, there was one question with two missing values

and seven questions with one missing value. These small amounts of missing data indicated no systematic or pervasive problem.

Table 3 summarizes the significant differences between cases with missing versus cases with non-missing values on the demographic variables of gender, age and education. The first column identifies the scale on which missing values showed a pattern of difference, the second identifies what demographic characteristic were different between missing and non-missing respondents, the third column provides the direction of the difference observed, and the final column identifies the t-value for that difference.

In general, the supervisee respondents with missing data tended to be male, while the supervisor respondents with missing data on one scale were younger, and on the other scale were more educated and male. However, the pattern of differences likely did not impact the overall analyses in any appreciable way. I addressed random missing values by replacing missing factor scale scores with the group mean for those items.

I identified univariate outliers by converting each raw score in the data set into a standardized score (z-score). Two cases were quite deviant from the mean of all cases (>2 SD from the mean): the first question on the WAI for both supervisee and supervisor. The question was "I feel uncomfortable with ____" with answers from 1 to 7 (Never to Always). Supervisee responses had a mean of 3.83 and standard deviation of 2.25, while supervisors responded with a mean of 3.03 and standard deviation of 2.09. Considering the question is one of eight questions that comprise the "Simple Knowledge" factor, I concluded the outliers would not distort the results of the study.

Table 3

Demographic Comparison of Respondents with Missing Compared to Non-Missing Scale Data

Scale	Demographic	Direction of difference	t-value
Supervisee			
ebi5	Gender	More likely to be male	-2.27*
ebi13	Gender	More likely to be male	-2.27*
wai6	Gender	More likely to be male	-3.30**
wai27	Gender	More likely to be male	-2.27*
Supervisor			
ebi6	Age	Somewhat younger	-4.87***
wai11	Gender, Highest degree	More likely to be male w/PhD	-3.30**, -3.12**

Note: *p < .05; **p < .01; ***p < .001

Multivariate outliers were not identified considering the EBI and WAI are existing surveys used in the way they were intended and the means and SD's appear reasonable.

Preliminary Analyses

To determine whether gender, age or educational level influenced the dependent variable, I conducted a series of independent samples *t* tests for the relationship scores between supervisors and supervisees. I found two statistically significant differences. First, masters level supervisors reported significantly higher mean scores on supervisor Working Alliance (M = 212.52, SD = 28.66) than doctoral level supervisors (M = 193.94, SD = 25.09, t(105) = -2.50, p = .01). This may suggest master's level supervisors enjoy a better relationship with their supervisees regarding goals, tasks and bonds. It may suggest that doctoral level supervisors are more frustrated or disappointed in their supervisees regarding goals tasks and bonds. It may also suggest that doctoral level supervisors are more realistic about their relationship with their supervisees, and don't need to report an unconsciously inflated view of their supervisory relationship to feel good about themselves. Interestingly, supervisees did not report significantly better Working Alliances with masters level supervisors over doctoral level supervisors. Second, supervisees reported significantly higher mean scores on Working Alliance with supervisors under age 51 (N = 55, M = 208.91, SD = 34.09) than with supervisors over age 51 (N = 52, M = 192.33, SD = 38.91, t(105) = -.35, p = .02). Considering the mean age of supervisees in the study was 31.5 and the mean age of supervisors was 48.2, this

may suggest that supervisees enjoyed a stronger Working Alliance with supervisors who were closer to their age.

Next I looked at correlations among demographic, epistemic and working alliance variables, beginning with the supervisee group in Table 4. There are only three columns in Table 4 because (a) I am only interested in the correlations for the three demographic measures, and (b) I list the other correlations in Table 6. Tabachnick & Fidell (2007) suggest that the correlation between a dichotomous variable (e.g., gender) and a continuous variable (e.g., simple knowledge, etc.) is falsely small if "most (say, over 90%) of the responses to the dichotomous variable fall into one category" (p. 62). In this study, 83% of the responses to the dichotomous variable fall into the category of "female," which suggests the correlation may be underestimated. However, since these correlation coefficients are similar to what have been reported in the literature (Bendixen, Schraw & Dunkle, 1998), I share them in Table 4 in order to compare with existing findings.

Gender was related to Simple and Certain Knowledge. Specifically, male supervisees were more likely to report naïve Simple and Certain Knowledge beliefs. Age was inversely related to Simple Knowledge and positively correlated to Education, indicating that older supervisees reported more complex simple and certain knowledge beliefs. They also more frequently reported post-baccalaureate education. Supervisee Education was not related to any of the other variables. These findings regarding age, simple knowledge and education were consistent with results in other studies. For example, Bendixen, Schraw & Dunkle (1998) found that age was inversely related to

Table 4

Correlations Among Supervisee Demographic, Epistemic and Working Alliance Variables

Variable	1	2	3
1. Gender	--		
2. Age	.05	--	
3. Education	.05	.48***	--
4. Simple Knowledge	.27**	-.22*	-.12
5. Certain Knowledge	.22*	-.06	-.12
6. Omniscient Authority	-.04	-.10	-.08
7. Innate Ability	.09	-.02	.02
8. Quick Learning	-.00	-.08	-.07
9. Working Alliance	.13	.08	.09

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

simple knowledge and positively correlated to education. Unger et al (1986) found that naïve epistemic assumptions were related inversely to age and education.

Table 5 shows correlations among supervisor demographic, epistemic and working alliance variables. Again there are only three columns in Table 4 because (a) I am only interested in the correlations for the three demographic measures, and (b) I list the other correlations in Table 6. Here, too, I report the correlation between gender and the other measures to mirror those correlation coefficients reported in the literature (Bendixen, Schraw & Dunkle, 1998).

Gender was related to Education, Omniscient Authority and Innate Ability, in each case with male higher than female respondents. Age was positively related to Education, Simple Knowledge, and Certain Knowledge. Education was negatively correlated with Omniscient Authority and Supervisory Working Alliance, while positively related to Innate Ability and Quick Learning. Some of these findings were consistent with the results in other studies. Age was related to education, as discussed above (Bendixon, Schraw & Dunkle, 1998). However Age in this sample was related to naïve Simple Knowledge and Certain Knowledge, suggesting supervisors in counseling supervision may modify their epistemic beliefs to "help" supervisees struggling with the stresses of practicum, and/or a paper and pencil test may not fully assess the complexities of epistemology, as hypothesized by Hofer (2000).

I hypothesized that the factor scores on the EBI would inversely correlate with the composite scores on the WAI. It is important to note that EBI factor scores range from 1 to 5, with 1 representing complex beliefs and 5 representing naïve beliefs. I transformed

Table 5

Correlations Among Supervisor Demographic, Epistemic and Working Alliance Variables

Variable	1	2	3
1. Gender	--		
2. Age	.07	--	
3. Education	.49***	.35***	--
4. Simple Knowledge	.11	.22*	-.03
5. Certain Knowledge	.17	.26**	-.16
6. Omniscient Authority	.25**	.01	-.33**
7. Innate Ability	.27**	.10	.19*
8. Quick Learning	.19	.15	.35***
9. Working Alliance	-.00	.09	-.24*

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

EBI's reverse-coded questions to be consistent with lower scores indicating more complex beliefs. WAI scores, on the other hand, range from 1 to 7, with 1 representing a worse working alliance and 7 representing a better working alliance. I hypothesized an inverse correlation between EBI factor and WAI composite scores, meaning as EBI factor scores went down (i.e., became more complex) WAI scores would go up (i.e., the working alliance would improve). Table 6 shows the intercorrelations between supervisee EBI subscales and supervisor WAI composite scores. The first five columns represent supervisee EBI subscales, and the 6th column represents supervisor working alliance.

Table 6 illustrates the first hypothesis was supported by the significant inverse correlation between supervisee Certain Knowledge and supervisor Working Alliance ($r = -.23$, $p = .02$). This finding means that more complex supervisee Certain Knowledge beliefs correlated significantly with better supervisor Working Alliance. The table also shows several other findings. Most supervisee epistemology subscales correlated inversely with supervisor working alliance, as hypothesized, though in this sample only one of these correlations was significant. Supervisee Omniscient Authority correlated positively though marginally with supervisor working alliance. Most supervisee epistemology subscales correlated inversely with supervisee working alliance, as hypothesized, three of which were marginally significant. Four of the ten supervisee epistemology subscales were positively correlated among themselves. In addition, supervisee working alliance positively and significantly correlated with supervisor working alliance, as hypothesized. So here we begin to see a relationship between

Table 6

Intercorrelations between Supervisee Epistemology and Supervisor Working Alliance

Subscale	1	2	3	4	5	6	7
Supervisee Epistemology (n = 107)							
1. Simple Knowledge	--						
2. Certain Knowledge	.24*	--					
3. Omniscient Authority	.10	.25*	--				
4. Innate Ability	.13	-.02	.07	--			
5. Quick Learning	.27**	.15^	.04	.48***	--		
Supervisee (n = 107) and Supervisor (n = 107) Working Alliance							
6. Working Alliance (EE)	.05	-.15^	-.06	-.18^	-.16^	--	
7. Working Alliance (OR)	-.13	-.23*	.16^	-.07	-.04	.49***	

Note: ^p < .14, *p < .05, **p < .01, ***p < .001

supervisee epistemological beliefs and working alliance -- among both supervisors and supervisees.

Table 7 shows the intercorrelations between supervisor EBI subscales and supervisee WAI composite scores. The first five columns represent supervisor EBI subscales, and the 6th column represents supervisee working alliance.

Table 7 illustrates the significant inverse correlation between supervisor epistemology (Quick Learning, $r = -.24$, $p = .01$) and supervisee Working Alliance, as hypothesized. In other words, complex supervisor Quick Learning significantly correlated with a positive supervisee Working Alliance. The table also shows several other interesting findings. All five supervisor epistemology subscales correlated inversely with supervisee working alliance, as hypothesized, though in this sample only one of these was significant (Quick Learning). Two of the five supervisor epistemology subscales correlated inversely with supervisor working alliance, as hypothesized, one of which was marginally significant (Quick Learning). In addition, nine of the ten supervisor epistemology subscales were significantly and positively correlated. Here we continue to see a relationship between supervisor epistemological beliefs and working alliance -- among both supervisors and supervisees.

Looking across the results of Tables 6 and 7, epistemology subscales tended to correlate inversely with composite working alliance scores among and between both supervisees and supervisors. In addition, supervisor epistemology subscales correlated among themselves more often (nine vs. four) than supervisee epistemology subscales, suggesting supervisor epistemology was perhaps more stable and refined than supervisee epistemology.

Table 7

Intercorrelations between Supervisor Epistemology and Supervisee Working Alliance

Subscale	1	2	3	4	5	6	7
Supervisor Epistemology (n = 107)							
1. Simple Knowledge	--						
2. Certain Knowledge	.57***	--					
3. Omniscient Authority	.27**	.52***	--				
4. Innate Ability	.44***	.32**	.55***	--			
5. Quick Learning	.50***	.12	.20*	.53***	--		
Supervisee (n = 107) and Supervisor (n = 107) Working Alliance							
6. Working Alliance (EE)	-.05	-.11	-.04	-.11	-.24*	--	
7. Working Alliance (OR)	.03	.04	.09	-.14	-.16^	.49***	--

Note. ^p < .14, *p < .05, **p < .01, ***p < .001

Table 8 shows the intercorrelations between supervisee and supervisor epistemological beliefs. The five columns represent supervisee epistemological belief factors. The five rows depict supervisor epistemological belief factors.

In general, few of the epistemology subscales between supervisees and supervisors were significantly (two of 25) or marginally (five of 25) correlated, but in different directions (positively and inversely). This finding suggests the epistemic beliefs of these two groups in general were not correlated and therefore were epistemologically different.

Table 9 provides means, standard deviations, skewness and kurtosis for the 12 subscales in this study, showing the reader how the participants responded to the inventories as supervisory subgroups in this study. The first column shows the group mean. The second column provides the group standard deviation. The third column displays the skewness. The fourth column shows the kurtosis.

In general, supervisors reported more complex epistemological beliefs scores than supervisees, and also reported more positive views of their supervisory working alliance. I provide a detailed analysis of the difference in means between supervisees and supervisors on every question on the EBI and WAI in Appendices E and I. The means and standard deviations of the epistemic beliefs were similar to those reported by Bendixen, Schraw and Dunkle (1998), in that Omniscient Authority had the highest means, Quick Learning had the lowest means, Certain Knowledge had next to the lowest means, and Simple Knowledge and Innate Ability had close means. Skewness and kurtosis are measures of multivariate normality. The assumption is that each variable and

Table 8

Intercorrelations between Supervisee and Supervisor Epistemological Beliefs

	Supervisee Epistemology (n = 107)				
Supervisor Epistemology (n = 107)	1	2	3	4	5
1. Simple Knowledge	-.17^	-.11	-.16^	-.03	.02
2. Certain Knowledge	-.10	.12	.10	.04	-.03
3. Omniscient Authority	-.15^	.15^	.10	-.15^	-.25*
4. Innate Ability	-.06	.05	.03	.13	-.02
5. Quick Learning	-.04	.00	-.11	.11	.19*

Note: ^p < .14, *p < .05, **p < .01, ***p < .001

all linear combinations of the variables are normally distributed. Statistical inference becomes less and less robust as distributions depart from normality. However, the impact of departure from zero skewness and kurtosis diminishes as sample size increases. With 107 subjects in each group, statistical inference seems robust. In Appendix M, I show the size and shape of the distributions, which also suggest the data are robust to assumptions concerning normality.

In general, what we have learned from these preliminary analyses includes (a) epistemological beliefs had a relationship with working alliance between supervisees and supervisors, as hypothesized, (b) demographic variables did not have a consistent

Table 9

Means and Standard Deviations for Epistemic Belief and Working Alliance Variables

Variable	Mean	SD	Skewness	Kurtosis
		Supervisees (n = 107)		
Simple Knowledge	2.64	.43	.70	1.47
Certain Knowledge	2.05	.47	.36	.42
Omniscient Authority	2.96	.47	.08	.24
Innate Ability	2.92	.63	.18	0.00
Quick Learning	1.89	.45	.79	1.26
Working Alliance	200.85	37.28	1.20	.99
		Supervisors (n = 107)		
Simple Knowledge	2.46	.47	.15	-.77
Certain Knowledge	2.00	.58	.59	-.45
Omniscient Authority	2.75	.56	-.32	-.37
Innate Ability	2.72	.50	.72	2.15
Quick Learning	1.80	.49	-.15	-1.06
Working Alliance	209.57	28.83	-1.34	1.54

Note. SD = Standard Deviation.

relationship with epistemic beliefs among supervisees and supervisors, and (c) supervisees and supervisors held uncorrelated epistemic beliefs.

Examining Relationships in the Data

Hypothesis One: Epistemology and Working Alliance

At Level One, I asked "what is the influence of epistemology on Working Alliance?" I organized the data by first looking at the influence of *supervisee* epistemology on Working Alliance and then *supervisor* epistemology on Working Alliance.

Supervisee Epistemology and Working Alliance

I first examined how epistemology (Certain Knowledge, Simple Knowledge, Omniscient Authority, Innate Ability and Quick Learning EBI scores) might relate to Working Alliance. Working alliance is widely believed to be essential for success in supervision and counseling. If epistemology and Working Alliance are related, the world of counselor education would want to know it. I explored the relationship between supervisee epistemology and Working Alliance in three steps, first looking at Working Alliance from the supervisee perspective, then the supervisor perspective, then both combined.

Supervisee beliefs on supervisee Working Alliance. Here I explored the relationship between supervisee epistemology and the supervisees' own version of Working Alliance (defined as supervisee composite scores on the WAI) using multiple regression. Table 10 illustrates the regression analysis which tests whether all five

supervisee epistemologies were associated with the supervisor's version of the working alliance. The first column shows the supervisee epistemology variable. The second column displays the Beta coefficient. The third column shows the corresponding t statistic.

None of these predictors showed significant association with supervisee Working Alliance after taking the others into account, although supervisee Certain Knowledge was marginally related. After successively removing the least associated predictors from the model, I found find that supervisee Certain Knowledge and Innate Ability were marginally significant predictors in this sample, as I show in Table 11. The first column shows the supervisee epistemology variable. The second column shows the Beta coefficient. The third column shows the corresponding t statistic.

Increased supervisee Certain Knowledge inversely related with supervisee Working Alliance after taking beliefs about Innate Ability into account. This result indicates that supervisees reporting more complex Certain Knowledge beliefs (e.g., "Truth means different things to different people") tended to report a somewhat more positive working alliance with their supervisor. Increased supervisee Innate Ability was also inversely related with supervisee Working Alliance after taking beliefs about Certain Knowledge into account. This result indicates that supervisees reporting a more complex Innate Ability epistemology (e.g., they disagree with statements like "Some people just have a knack for learning and others don't") tended to report better relationship success with their supervisor. These relationships are shown graphically in Figure 1.

In general, supervisee Certain Knowledge and Innate Ability were marginally associated with supervisee working alliance. As will be shown, complex supervisee

Table 10

Summary of Regression Analysis for Supervisee Epistemology Variables on Supervisee Working Alliance (N = 107)

Variable	Beta	t
Simple Knowledge (supervisee)	.14	1.34
Certain Knowledge (supervisee)	-.16	-1.57^
Omniscient Authority (supervisee)	-.02	-.18
Innate Ability (supervisee)	-.15	-1.37
Quick Learning (supervisee)	-.09	-.83

Note: ^p < .14; *p < .05; **p < .01

Table 11

Summary of Regression Analysis for Supervisee Certain Knowledge and Innate Ability on the Supervisee Working Alliance (N = 107)

Variable	Beta	t
Certain Knowledge (supervisee)	-.15	-1.55^
Innate Ability (supervisee)	-.18	-1.85^

Note: ^p < .14; *p < .05; **p < .01

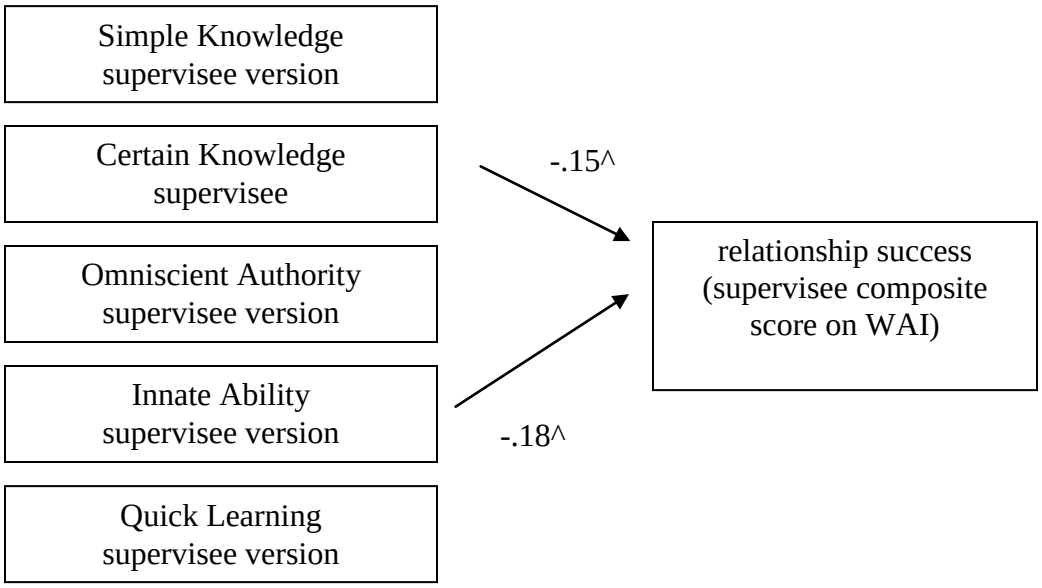

Figure 1. Relationship between supervisee epistemology and supervisee Working Alliance.

Certain Knowledge is the most consistent predictor of supervisee and supervisor Working Alliance.

Supervisee beliefs on supervisor Working Alliance. I then explored the relationship between supervisee epistemology and supervisory relationship success (defined as the supervisor composite score on the WAI) using multiple regression. Table 12 illustrates the results of the regression, which tests whether all five supervisee epistemologies contributed to the supervisor's version of the working alliance. The first column shows the supervisee epistemology variable. The second column shows the Beta coefficient, which indicates the portion of standard deviation change in the outcome for

every standard deviation increase in the predictor. The third column shows the corresponding t statistic.

At this point in the analysis, it would not be appropriate to observe the significant relationships in this model, as they are masked by the non-significant predictors. What is clear is that supervisee Simple Knowledge, Innate Ability, and Quick Learning were not significant predictors of supervisor Working Alliance with this sample.

Table 13 shows the significant epistemic contributors to the supervisor's version of their relationship success. The first column shows the supervisee epistemology variable. The second column shows the Beta coefficient. The third column shows the corresponding t statistic.

This result indicates that, for similar levels of Omniscient Authority, low supervisee Certain Knowledge scores (complex epistemology, e.g., "truth means different things to different people") were associated with high supervisor WAI scores (better relationship). Interestingly, after taking supervisee level of Certain Knowledge into account, their level of Omniscient Authority was positively related to relationship success, suggesting that higher supervisee scores indicating more naïve epistemology (e.g., "people should always obey the law") was associated with a better working alliance with the supervisor. These relationships are shown graphically in Figure 2.

Increased supervisee Certain Knowledge inversely related with supervisor relationship success after taking supervisee level of Omniscient Authority into account. In general, supervisee Certain Knowledge and Omniscient Authority were associated with supervisory Working Alliance, albeit in opposite directions. This compares with

Table 12

Summary of Regression Analysis for Supervisee Epistemology Variables on Supervisor Working Alliance (N = 107)

Variable	Beta	t
Simple Knowledge (supervisee)	-.09	-.89
Certain Knowledge (supervisee)	-.28	-2.82**
Omniscient Authority (supervisee)	.24	2.47*
Innate Ability (supervisee)	-.11	-1.05
Quick Learning (supervisee)	.07	.64

Note: *p < .05; **p < .01

Table 13

Summary of Regression Analysis for Supervisee Certain Knowledge and Omniscient Authority on Supervisor Working Alliance (N = 107)

Variable	Beta	t
Certain Knowledge (supervisee)	-.29	-2.99**
Omniscient Authority (supervisee)	.23	2.35*

Note: *p < .05; **p < .01

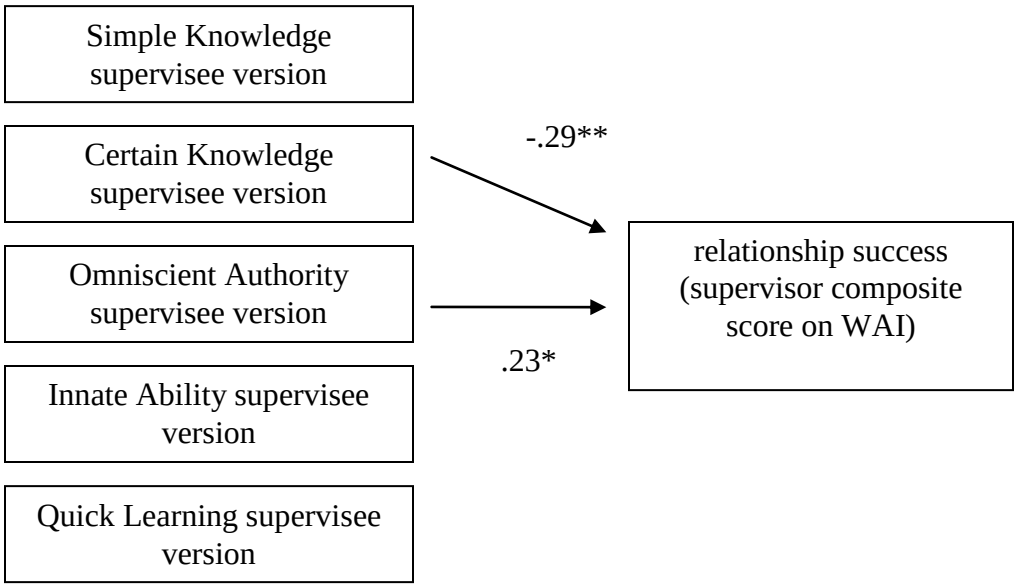

Figure 2. Relationship between supervisee epistemology and supervisor Working Alliance.

complex supervisee Certain Knowledge and Innate Ability being marginally associated with supervisee Working Alliance demonstrated previously

Supervisee beliefs on combined Working Alliance. Next I examined the relationship between supervisee epistemology and the sum of both relationship scores (the sum of supervisee and supervisor composite scores on the WAI) using multiple regression. This score represents a way to measure the total relationship success including the perceptions of both supervisor and supervisee. Table 14 illustrates the contribution of the five supervisee epistemic beliefs to this sum of relationship success. The first column shows the supervisee epistemology variable. The second column shows the Beta coefficient. The third column shows the corresponding t statistic.

Table 14

Summary of Regression Analysis for Supervisee Epistemology Variables on the Sum of Supervisee and Supervisor Working Alliance (N = 107)

Variable	Beta	t
Simple Knowledge (supervisee)	.04	.44
Certain Knowledge (supervisee)	-.25	-2.42*
Omniscient Authority (supervisee)	.11	1.10
Innate Ability (supervisee)	-.16	-1.42
Quick Learning (supervisee)	-.03	-.23

Note: ^p < .14; *p < .05; **p < .01

Four of the five epistemic beliefs were not significant predictors of joint Working Alliance in this sample. Increased supervisee Certain Knowledge inversely was associated with joint relationship success, as the cleaned model shows in Table 15. The first column shows the supervisee epistemology variable. The second column displays the Beta coefficient. The third column shows the corresponding t statistic.

Increased levels of supervisee Certain Knowledge inversely related with joint relationship success. This result indicates that complex supervisee Certain Knowledge (e.g., "truth means different things to different people") was associated with a better working alliance from the perspective of both supervisees and supervisors, as seen in Figure 3.

Table 15

Summary of Regression Analysis for Supervisee Certain Knowledge on the Sum of Supervisee and Supervisor Working Alliance (N = 107)

Variable	Beta	t
Certain Knowledge (supervisee)	-.21	-2.21*

Note: ^p < .14; *p < .05; **p < .01

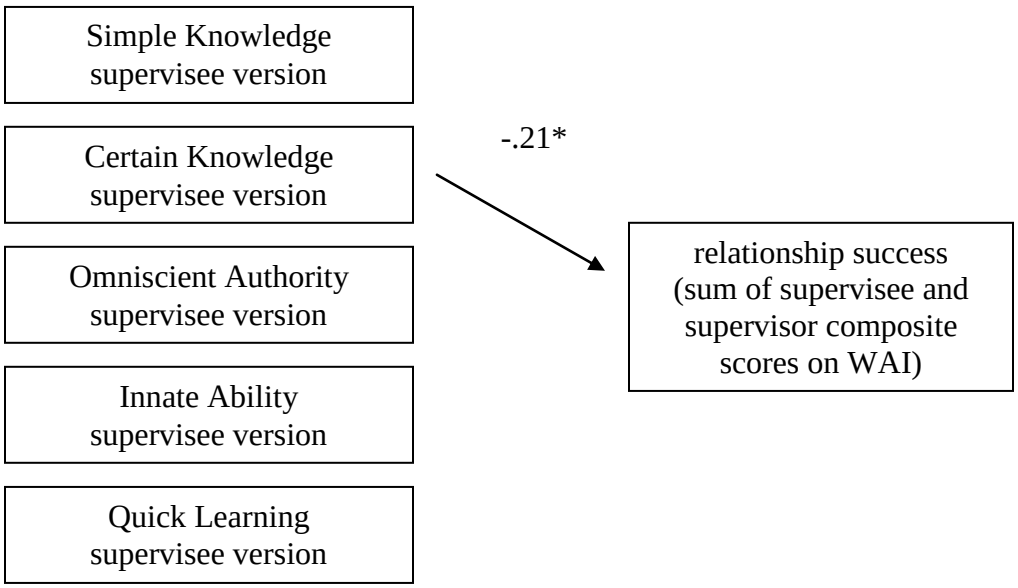

Figure 3. Relationship between supervisee epistemology and combined Working Alliance.

In general, complex supervisee Certain Knowledge was the only personal epistemology related to a positive Working Alliance from the combined perspective of supervisees and supervisors.

Supervisor Epistemology and Working Alliance

Next I examined how supervisor epistemology might relate to working alliance. If working alliance, one of the most important factors in supervision and counseling success, is related to supervisor epistemology, it would be important to the field of counseling and supervision to explore it. I did so in three steps, first looking at working alliance from the supervisee perspective, then the supervisor perspective, then both combined.

Supervisor beliefs on supervisee Working Alliance. Next I explored the relationship between supervisor epistemology and supervisee relationship success (defined as the composite score on the WAI) using multiple regression. Table 16 illustrates the contribution of all five supervisor epistemic beliefs to supervisee Working Alliance. The first column shows the supervisor epistemology variable. The second column shows the Beta coefficient. The third column shows the corresponding t statistic.

Supervisor Omniscient Authority and Innate Ability were not significant predictors of supervisee Working Alliance in this sample. However, supervisor Simple Knowledge, Certain Knowledge and Quick Learning each showed an association with supervisee Working Alliance. Table 17 illustrates a cleaned model that estimates the significant relationships for the sample. The first column shows the supervisor

Table 16

Summary of Regression Analysis for Supervisor Epistemology Variables on Supervisee Working Alliance (N = 107)

Variable	Beta	t
Simple Knowledge (supervisor)	.25	1.80^
Certain Knowledge (supervisor)	-.26	-1.89^
Omniscient Authority (supervisor)	.10	.78
Innate Ability (supervisor)	-.01	-.07
Quick Learning (supervisor)	-.35	-2.84**

Note: ^p < .14; *p < .05; **p < .01

Table 17

Summary of Regression Analysis for Supervisor Simple Knowledge, Certain Knowledge and Quick Learning Variables on Supervisee Working Alliance (N = 107)

Variable	Beta	t
Simple Knowledge (supervisor)	.23	1.72^
Certain Knowledge (supervisor)	-.20	-1.70^
Quick Learning (supervisor)	-.34	-3.00**

Note: ^p < .14; *p < .05; **p < .01

epistemology variable. The second column shows the Beta coefficient. The third column shows the corresponding t statistic.

Increased supervisor Quick Learning inversely related with supervisee Working Alliance after taking the other two beliefs into account. This finding suggests lower (or more complex) Quick Learning scores (e.g., supervisors who disagreed with "students who learn things quickly are the most successful") were associated with a better supervisee working alliance. Supervisor Certain Knowledge was also moderately associated with supervisee relationship success after taking the other two beliefs into account, indicating complex supervisor Certain Knowledge beliefs (e.g., "truth means different things to different people") related to better supervisee working alliance. Interestingly, after taking supervisor level of Certain Knowledge and Quick Learning into account, their level of Simple Knowledge was positively moderately related to supervisee relationship success. This result indicates that naïve supervisor Simple Knowledge (e.g., "instructors should focus on facts instead of theories) was positively associated with a better working alliance with the supervisee. These relationships are shown graphically in Figure 4.

In general, supervisor Simple Knowledge, Certain Knowledge and Quick Learning were associated with supervisee Working Alliance, with Omniscient Authority and Quick Learning beliefs showing the hypothesized direction, and Simple Knowledge beliefs working against that direction. This finding compares with complex supervisee Certain Knowledge also being associated with supervisee and supervisor working alliance in Figures 1 and 2.

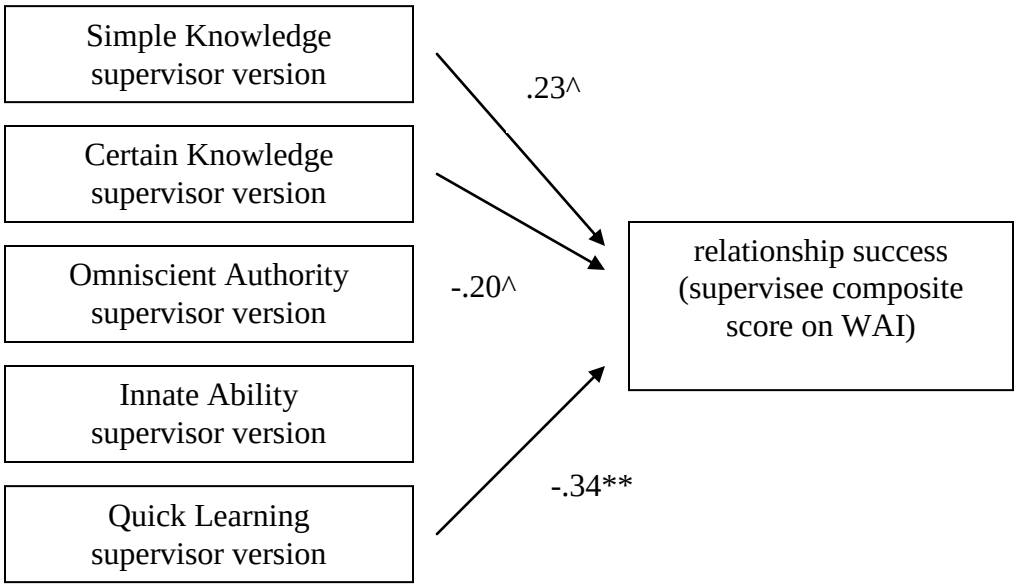

Figure 4. Relationship between supervisor epistemology and supervisee Working Alliance.

Supervisor beliefs on supervisor Working Alliance. The next relationship I explored was between supervisor epistemology and supervisor relationship success (defined as supervisor composite score on the WAI) using multiple regression. Table 18 illustrates the full model which tests the contribution of all five supervisor epistemic beliefs to supervisor Working Alliance. The first column shows the supervisor epistemology variable. The second column displays the Beta coefficient. The third column shows the corresponding t statistic.

Increased supervisor Certain Knowledge was not a significant predictor of supervisor perception of relationship success in this sample after taking the other beliefs into account. After systematically removing the least significant predictors from the model, supervisor Innate Ability and Omniscient Authority were significantly associated

Table 18

Summary of Regression Analysis for Supervisor Epistemology Variables on Supervisor Working Alliance (N = 107)

Variable	Beta	t
Simple Knowledge (supervisor)	.24	1.72^
Certain Knowledge (supervisor)	-.14	-1.05
Omniscient Authority (supervisor)	.27	2.11*
Innate Ability (supervisor)	-.25	-1.88^
Quick Learning (supervisor)	-.19	-1.49^

Note: ^p < .14; *p < .05; **p < .01

with the supervisor's report of relationship success in this sample. Table 19 summarizes those results. The first column shows the supervisor epistemology variable. The second column displays the Beta coefficient. The third column shows the corresponding t statistic.

Increased supervisor Innate Ability inversely related with supervisor relationship success after taking supervisor level of Omniscient Authority into account. This result indicates that low supervisor Innate Ability scores (more complex epistemology, e.g., they disagreed with "Some people will never be smart no matter how hard they work") was associated with high supervisor WAI scores (better relationship success with their supervisees). Interestingly, after taking supervisor level of Innate Ability into account,

Table 19

Summary of Regression Analysis for Supervisor Innate Ability and Omniscient Authority on Supervisor Working Alliance (N = 107)

Variable	Beta	t
Omniscient Authority (supervisor)	.24	2.08*
Innate Ability (supervisor)	-.27	-2.36*

Note: ^p < .14; *p < .05; **p < .01

their level of Omniscient Authority was positively related to supervisor relationship success. This result suggests that higher (more naïve) supervisor Omniscient Authority belief scores (e.g., "when someone in authority tells me what to do, I usually do it") were associated with a better supervisory Working Alliance, as in Figure 5.

In general, naïve supervisor Omniscient Authority and complex Innate Ability were associated with supervisor Working Alliance. This finding compares with naïve supervisee Omniscient Authority being associated with supervisor Working Alliance in Figure 2.

Supervisor beliefs on combined Working Alliance. Finally I explored the relationship between supervisor epistemology and joint relationship success (defined as the sum of supervisee and supervisor composite scores on the WAI) using multiple regression. Table 20 summarizes the results of the full model examining how all five epistemologies contribute to the relationship. The first column shows the supervisor

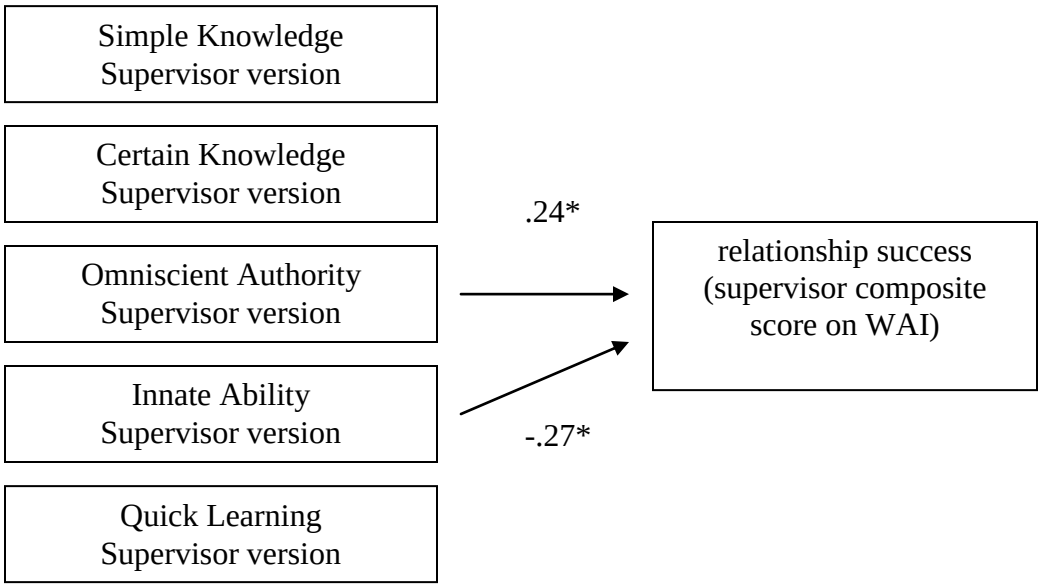

Figure 5. Relationship between supervisor epistemology and supervisor Working Alliance.

epistemology variable. The second column displays the Beta coefficient. The third column shows the corresponding t statistic.

In this sample, supervisor Innate Ability was not a significant predictor of joint relationship success. After taking Innate Ability out of the model, Omniscient Authority was not related to the outcome. After taking Omniscient Authority out of the model, Certain Knowledge was not related to the outcome. After taking Certain Knowledge out of the model, Simple Knowledge was not associated with the outcome. After cleaning the model, only supervisor Quick Learning was significantly associated with joint relationship success. Table 21 presents the final result of the successive tests of multiple regression. The first column displays the supervisor epistemology variable. The second

Table 20

Summary of Regression Analysis for Supervisor Epistemology Variables on the Sum of Supervisee and Supervisor Working Alliance (N = 107)

Variable	Beta	t
Simple Knowledge (supervisor)	.29	2.06*
Certain Knowledge (supervisor)	-.24	-1.77^
Omniscient Authority (supervisor)	.20	1.59^
Innate Ability (supervisor)	-.13	-1.00
Quick Learning (supervisor)	-.33	-2.62**

Note: ^p < .14; *p < .05; **p < .01

Table 21

Summary of Regression Analysis for Supervisor Quick Learning on the Sum of Supervisee and Supervisor Working Alliance (N = 107)

Variable	Beta	t
Quick Learning (supervisor)	-.24	-2.52**

Note: ^p < .14; *p < .05; **p < .01

column shows the Beta coefficient. The third column displays the corresponding t statistic.

Increased supervisor Quick Learning inversely related with joint relationship success, suggesting complex supervisor epistemology (e.g., disagreeing with "if you don't learn something quickly, you won't ever learn it") was associated with a better working alliance with both supervisee and supervisor, shown graphically in Figure 6. In general, complex supervisor Quick Learning was associated with improved relationship success from the combined perspective of supervisees and supervisors. There were no levels of supervisee Quick Learning associated with Working Alliance.

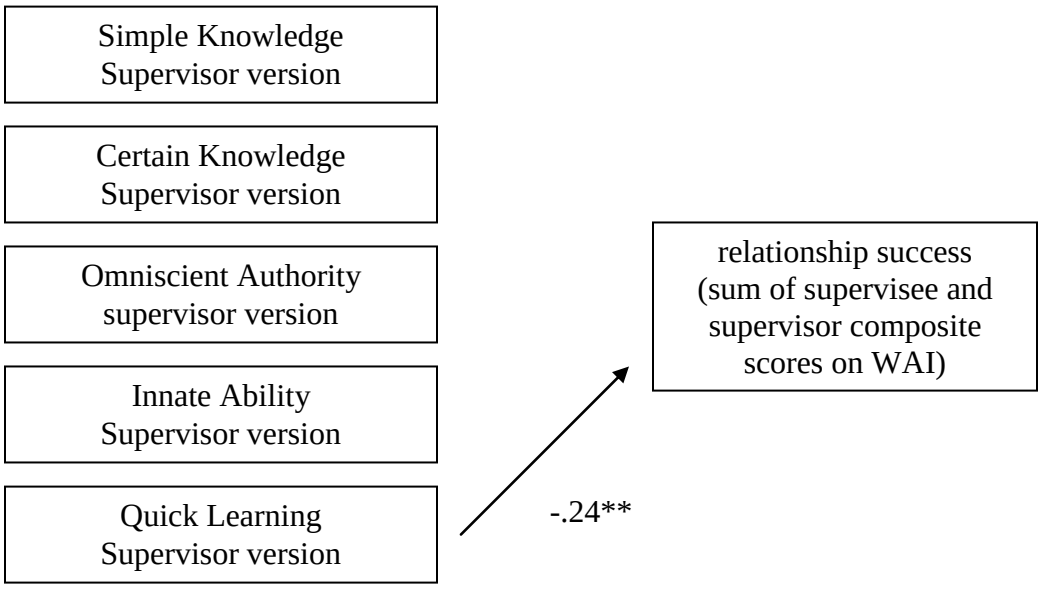

Figure 6. Relationship between supervisor epistemology and combined Working Alliance.

Summary

Overall, in Stage One I found that every epistemological belief was associated with relationship success at least once. Table 22 shows a summary of which epistemological beliefs were associated with Working Alliance in this sample. The first column lists the epistemological belief variable. The second column displays the subjects (IV on DV) of the regression. The third column shows the corresponding Beta statistic and significance level.

In general, complex Certain Knowledge was the most consistent predictor of the Working Alliance outcome (four associations). Complex supervisee Certain Knowledge was associated with supervisee and supervisor Working Alliance. Complex supervisor Certain Knowledge was marginally related to supervisee Working Alliance.

Complex Innate Ability and Quick Learning scores were also associated with relationship success. Complex supervisee and supervisor beliefs about Innate Ability were associated with their own perceptions of their Working Alliance. Complex supervisor Quick Learning was associated with supervisee Working Alliance.

Interestingly, naïve supervisor Simple Knowledge and naïve supervisee and supervisor Omniscient Authority scores were also related to a positive Working Alliance. I will discuss possible reasons for this finding in chapter 5. Overall, these findings illustrate that personal epistemology is associated with working alliance among and between supervisees and supervisors.

Table 22

Summary of Epistemological Beliefs Associated with Working Alliance

Epistemological Belief	Subjects (IV on DV)	Beta
Simple Knowledge	Supervisor on Supervisee	.23^
Certain Knowledge	Supervisee on Supervisor	-.29**
	Supervisor on Supervisee	-.20^
	Supervisee on SUM	-.21*
	Supervisee on Supervisee	-.15^
Omniscient Authority	Supervisee on Supervisor	.23*
	Supervisor on Supervisor	.24*
Innate Ability	Supervisee on Supervisee	-.18^
	Supervisor on Supervisor	-.27*
Quick Learning	Supervisor on Supervisee	-.34**
	Supervisor on SUM	-.24**

Note: ^p < .14; *p < .05; **p < .01

Hypothesis Two: Adding Gender Age and Education to the Impact of Epistemology on Working Alliance

At this stage, I explored the influence of gender, age and education on each of the epistemology variables using a path analysis, including two rounds of multiple regression. First I examined the impact of supervisee demographic variables on epistemology. Then I looked at the impact of supervisor demographics on epistemology.

Adding Supervisee Gender, Age and Education to the Impact of Epistemology on Working Alliance

I explored the influence of supervisee gender, age and education on supervisee epistemology using a path analysis, including two rounds of multiple regression. I ran the model on all five supervisee beliefs. Table 23 shows that supervisee demographic variables were significantly associated with supervisee Simple Knowledge and Certain Knowledge. The first column shows the supervisee predictor. The next five columns display the Beta coefficient for the supervisee epistemological beliefs.

Supervisee Gender and Age were related to their beliefs about Simple Knowledge. Male supervisees were more likely to hold naïve Simple Knowledge and Certain Knowledge beliefs. Supervisee Age and Simple Knowledge had a significant inverse relationship, suggesting that increased supervisee age was related to more complex epistemology. This finding has been supported by a number of other studies (Bendixen, Schraw & Dunkle, 1998; Unger et al, 1986), as discussed after Table 4 above. Supervisee Education (Bachelors degrees compared to post-Bachelors degrees) was not significantly associated with any of the five epistemological beliefs.

Table 23

Summary of Regression Analysis for Supervisee Demographic Variables on Supervisee Epistemology (N = 107)

Supervisee Predictor	SK	CK	OA	IA	QL
Age	-.22*	-.08	-.07	-.04	-.07
Gender	.29**	.22*	-.04	.09	.00
Education	-.03	.01	-.05	.04	-.04

Note: ^p < .14; *p < .05; **p < .01; ***p < .001

Next, I ran a regression between all eight supervisee predictors and Working Alliance. Table 24 shows the results. The first column displays the supervisee predictors. The second column shows the supervisee Working Alliance beta. The third column lists the supervisor Working Alliance beta. While the relationship of supervisee predictors and supervisor Working Alliance was my original hypothesis, I provide supervisee Working Alliance as a comparison.

After taking into account supervisee demographic factors, supervisee Certain Knowledge and Omniscient Authority were still related to supervisory relationship success, albeit in different directions. This result indicates that complex supervisee Certain Knowledge beliefs (e.g., "truth means different things to different people") were associated with supervisory relationship success. After taking supervisee level of Certain Knowledge into account, their level of naïve Omniscient Authority (e.g., those who

disagreed with "children should be allowed to question their parents' authority") was also related to supervisory working alliance. Figure 7 illustrates the significant associations between supervisee demographics, epistemology, and supervisor version of relationship success.

In general, supervisee Certain Knowledge and Omniscient Authority were associated with supervisor relationship success, though in opposite directions, even after the influence of gender, age and education were considered.

Table 24

Summary of Regression Analysis for Supervisee Variables on Supervisee and Supervisor Working Alliance (N = 107)

Supervisee Predictor	Supervisee Working Alliance	Supervisor Working Alliance
Age	.04	-.02
Gender	.15	.01
Education	.08	.03
Simple Knowledge	.11	-.09
Certain Knowledge	-.20^	-.29**
Omniscient Authority	.01	.24*
Innate Ability	-.18	-.12
Quick Learning	-.06	.07

Note: ^p < .14; *p < .05; **p < .01; ***p < .001

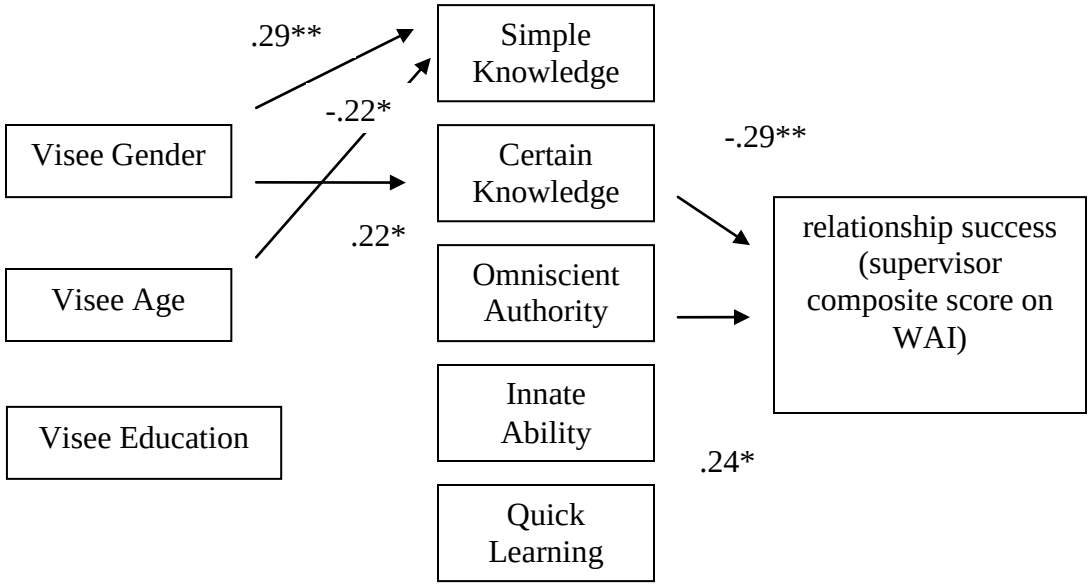

Figure 7. Relationship between supervisee Gender, Age and Education and supervisee epistemology and their joint impact on supervisor Working Alliance

Adding Supervisor Gender, Age and Education to the Impact of Epistemology on Working Alliance

Next I explored the influence of supervisor gender, age and education on supervisor epistemology using a path analysis, including two rounds of multiple regression. I ran the model on all five supervisor beliefs, and all five showed significant results. Table 25 illustrates the significant findings. The first column shows the supervisor predictor. The next five columns display the Beta coefficient for the supervisor epistemological beliefs.

Increasing supervisor Age was associated with naïve Simple Knowledge, Certain Knowledge, and Omniscient Authority. Male gender was related to naive supervisor Simple Knowledge, Certain Knowledge, Omniscient Authority, and Innate Ability. Supervisor doctoral Education was related to complex Simple Knowledge, Certain

Table 25

Summary of Regression Analysis for Supervisor Demographic Variables on Supervisor Epistemology (N = 107)

Supervisor Predictor	SK	CK	OA	IA	QL
Age	.28**	.40***	.21*	.06	.04
Gender	.20^	.37***	.57***	.24*	.03
Education	-.22^	-.48***	-.68***	.06	.33**

Note: ^p < .14; *p < .05; **p < .01; ***p < .001

Knowledge, Omniscient Authority, and to naïve Quick Learning. Supervisor age, gender and education were significantly associated with all five of the supervisors' epistemic subscales.

Next, I ran a regression between all eight supervisor predictors and Working Alliance. Table 26 shows the results. The first column displays the supervisee predictors. The second column shows the supervisee Working Alliance beta. The third column lists the supervisor Working Alliance beta. While the relationship of supervisor predictors and supervisee Working Alliance was my original hypothesis, I provide supervisor Working Alliance as a comparison.

Three of the five supervisor epistemological beliefs were associated with supervisee Working Alliance after taking into account the effect of Age, Gender and

Table 26

Summary of Regression Analysis for Supervisor Variables on Supervisee and Supervisor Working Alliance (N = 107)

Supervisor Predictors	Supervisee Working Alliance	Supervisor Working Alliance
Age	-.07	.25*
Gender	.22^	.22^
Education	-.08	-.38**
Simple Knowledge	.25^	.13
Certain Knowledge	-.25^	-.18
Omniscient Authority	.01	.06
Innate Ability	-.01	-.13
Quick Learning	-.34*	-.09

Note: ^p < .14; *p < .05; **p < .01; ***p < .001

Education. Complex Certain Knowledge and Quick Learning were associated with improved Working Alliance. Naïve Simple Knowledge and male Gender were moderately related to positive Working Alliance in this sample. Looking across Tables 24 and 26 indicates that demographic variables had a more significant impact on supervisor epistemology than on supervisee epistemology. The path analysis in Figure 8 illustrates these relationships.

In general, Gender, Age and Education were significantly associated with supervisor epistemology in this sample. After taking into account the influence of those demographic variables, supervisor complex Quick Learning, complex Certain Knowledge, naïve Simple Knowledge and male Gender were related to supervisee Working Alliance.

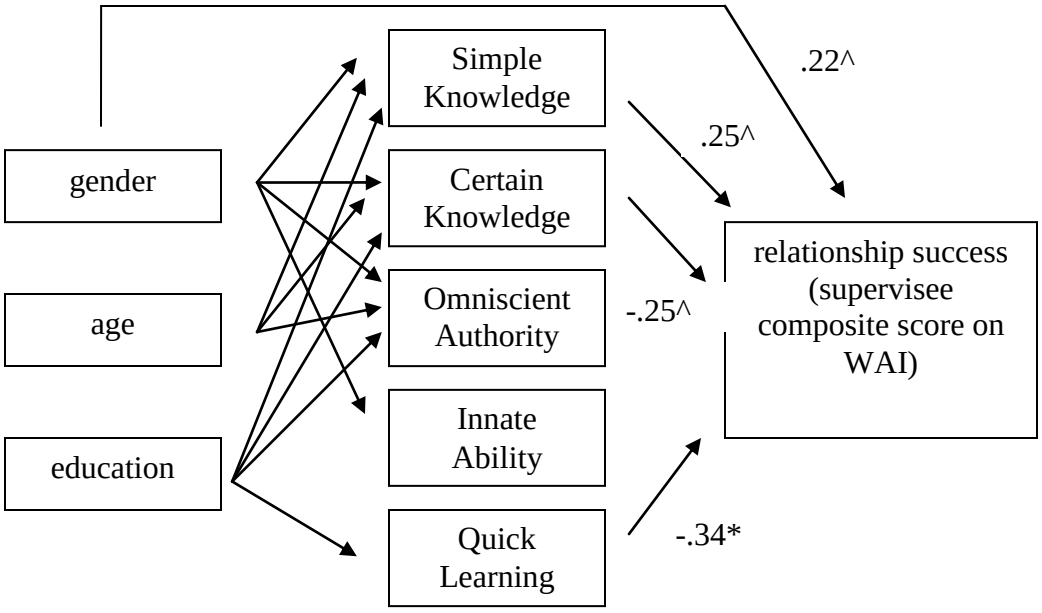

Figure 8. Relationship between supervisor Gender, Age and Education and supervisor epistemology and their joint impact on supervisee Working Alliance

Summary

Overall, personal epistemology continued to be associated with working alliance for both supervisors and supervisees, after taking into account the effect of Gender, Age and Education. Complex Certain Knowledge had the greatest relationship with Working Alliance for both supervisors and supervisees, after controlling for Gender, Age and Education.

Hypothesis Three: Exploring Interactions between Predictors

Interactions between continuous predictors are not common, but are of interest if we want to know whether the importance of one predictor varies over the range of another predictor (Tabachnick & Fidell, 2007). If so, the second predictor is said to

moderate the relationship between the first predictor and the outcome. In this study, supervisee epistemology comprises five predictors (Simple Knowledge, Certain Knowledge, Omniscient Authority, Innate Ability and Quick Learning) and supervisor epistemology comprises five predictors (Simple Knowledge, Certain Knowledge, Omniscient Authority, Innate Ability and Quick Learning). The interaction question becomes, "is the importance of supervisee epistemology in predicting supervisor Working Alliance the same over the range of supervisor epistemology?" As the analysis in Figure 9 shows, supervisor epistemology (Simple Knowledge and Certain Knowledge) was found to moderate the relationship between supervisee epistemology and supervisor Working Alliance.

Since there is interaction, the regression coefficient for supervisee epistemology differs depending on supervisor epistemology. A different regression coefficient for supervisee epistemology (Simple Knowledge and Certain Knowledge) is needed for different supervisor levels of epistemology.

When interaction terms are statistically significant, plots are useful for interpretation. Plots are generated by solving the regression equation at low and high levels of the moderating predictor.

In the next section I will present four plots of significant interactions between epistemology and Working Alliance. The first two plots will measure the interaction using supervisor Working Alliance as the dependent variable, and the last two plots will do the same using supervisee Working Alliance as the dependent variable.

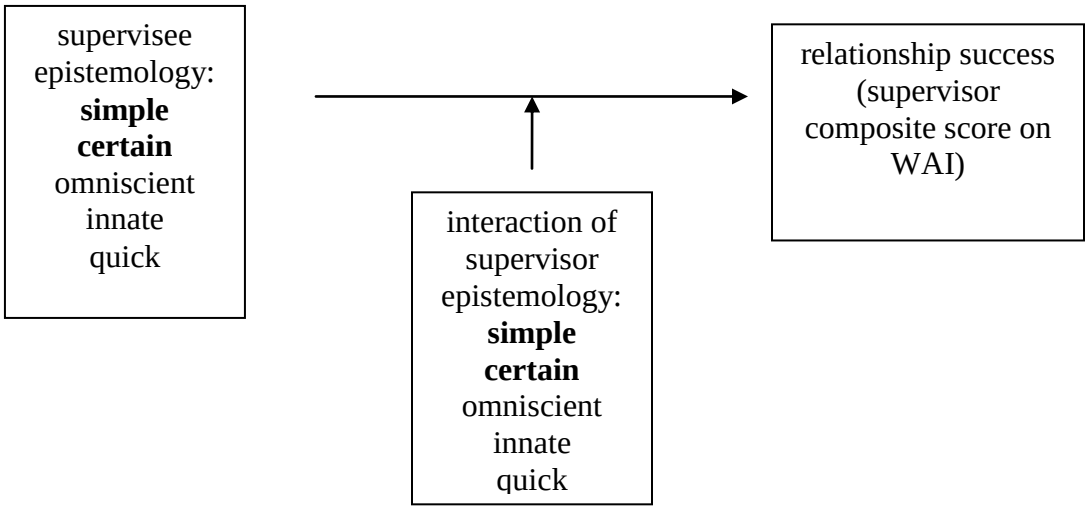

Figure 9. Interaction of supervisee and supervisor Simple and Certain Knowledge on supervisor Working Alliance

Interaction of Epistemology on Supervisor Working Alliance

Figure 10 shows the interaction of supervisee and supervisor Simple Knowledge on supervisor Working Alliance.

In this plot, supervisee Simple Knowledge related inversely ($t = -2.75$, $p = .01$) with supervisor Working Alliance, supervisor Simple Knowledge related inversely ($t = -2.46$, $p = .02$) with supervisor Working Alliance, and the interaction between supervisee Simple Knowledge and supervisor Simple Knowledge was significant ($t = 2.52$, $p = .01$). These results indicate that in dyads in which supervisor epistemology concerning Simple Knowledge was complex, more naïve levels of supervisee beliefs about Simple Knowledge were associated with lower supervisor views of Working Alliance. However,

in dyads in which supervisor epistemology was naïve, Working Alliance was better when the supervisee's beliefs were also naïve. In other words, supervisee beliefs impacted

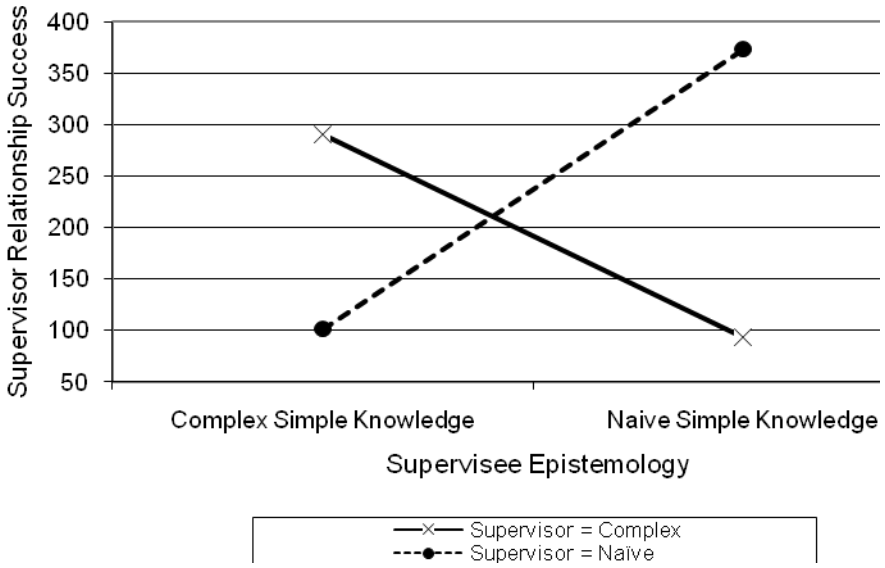

Figure 10. Interaction of supervisee and supervisor Simple Knowledge on supervisor Working Alliance

Working Alliance in the direction of their own beliefs – more positive with those beliefs more similar to their own.

Figure 11 shows the interaction of supervisee and supervisor Certain Knowledge on supervisor Working Alliance. In this model, complex supervisee Certain Knowledge related ($t = -2.84$, $p = .01$) with supervisor Working Alliance, complex supervisor Certain Knowledge correlated inversely but moderately ($t = -1.88$, $p = .06$) with supervisor Working Alliance, and the interaction between supervisee and supervisor Certain Knowledge was positively associated ($t = 2.14$, $p = .04$). These results indicate once again that in dyads in which supervisor epistemology concerning Certain Knowledge was complex, more naïve levels of supervisee beliefs about Certain Knowledge were

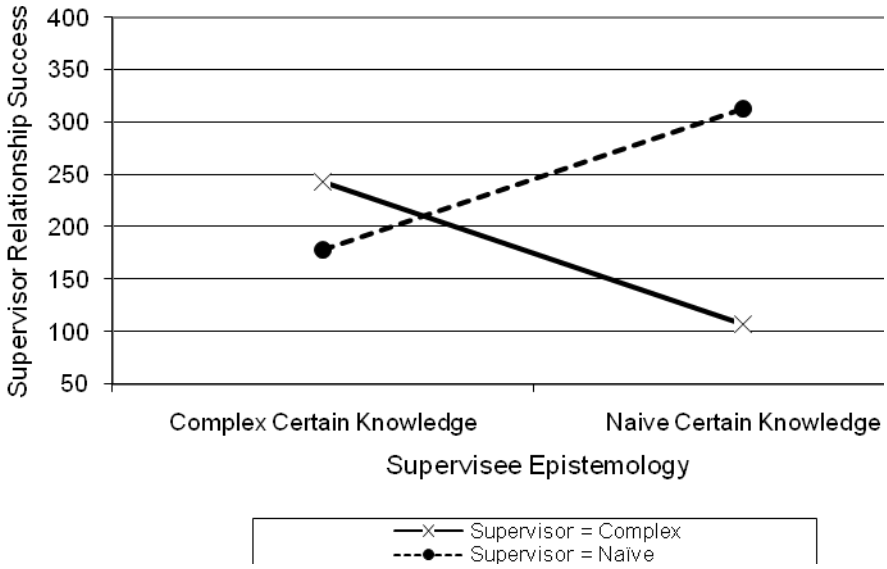

Figure 11. Interaction of supervisee and supervisor Certain Knowledge on supervisor Working Alliance

associated with lower supervisor views of Working Alliance. However, in dyads in which supervisor epistemology was naïve, Working Alliance was better when the supervisee's beliefs were also naïve. In other words, supervisee beliefs impacted Working Alliance in the direction of their own beliefs – more positive with those beliefs more similar to their own.

Interaction of Epistemology on Supervisee Working Alliance

The next interaction question becomes "is the importance of supervisor epistemology in predicting supervisee Working Alliance the same over the range of supervisee epistemology?" As the analysis in Figure 12 shows, supervisee epistemology

(Certain Knowledge and Innate Ability) was found to moderate the relationship between supervisor epistemology and supervisee Working Alliance.

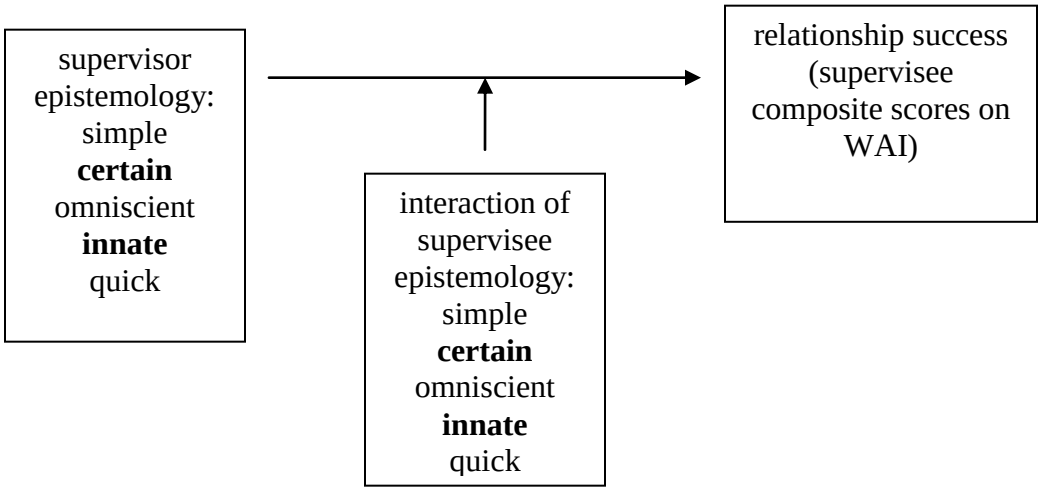

Figure 12. Interaction of Certain Knowledge and Innate Ability on supervisor Working Alliance

Since there is interaction, the regression coefficient for supervisor epistemology differs depending on supervisee epistemology. A different regression coefficient for supervisor epistemology (Certain Knowledge and Innate Ability) is needed for different supervisee levels of epistemology.

Figure 13 shows the interaction of supervisee and supervisor Certain Knowledge on supervisee Working Alliance.

Complex supervisor Certain Knowledge related ($t = -2.91$, $p = .00$) with supervisee Working Alliance, complex supervisee Certain Knowledge was associated ($t = -2.76$, $p = .01$) with supervisee Working Alliance, and the interaction between supervisor and supervisee Certain Knowledge was positively related ($t = 2.60$, $p = .01$). These

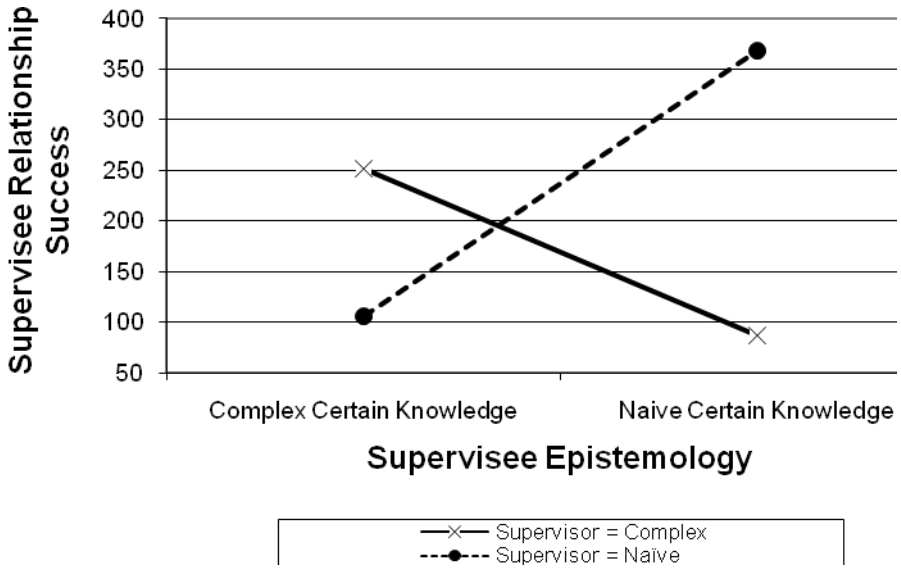

Figure 13. Interaction of supervisee and supervisor Certain Knowledge on supervisee Working Alliance

results indicate that in dyads in which supervisor epistemology concerning Certain Knowledge was complex, more naïve levels of supervisee beliefs about Certain Knowledge were associated with lower supervisee views of Working Alliance. However, in dyads in which supervisor epistemology was naïve, Working Alliance was better when the supervisee's beliefs were also naïve. In other words, supervisee beliefs impacted Working Alliance in the direction of their own beliefs – more positive with those beliefs more similar to their own. These results parallel those found for supervisor views of Working Alliance.

Figure 14 shows the interaction of supervisee and supervisor Innate Ability on supervisee Working Alliance.

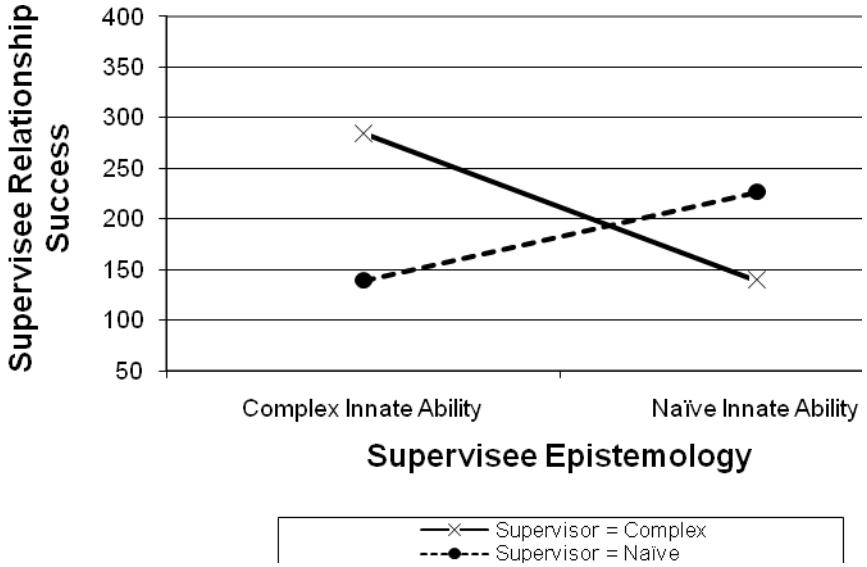

Figure 14. Interaction of supervisee and supervisor Innate Ability on supervisee Working Alliance

Complex supervisor Innate Ability marginally ($t = -1.862$, $p = .065$) related with supervisee Working alliance, complex supervisee Innate Ability marginally ($t = -2.03$, $p = .05$) related with supervisee Working Alliance, and the interaction between supervisor and supervisee Innate Ability was positively but marginally related ($t = 1.68$, $p = .10$). These results indicate that in dyads in which supervisor epistemology concerning Innate Ability was complex, more naïve levels of supervisee beliefs about Innate Ability were associated with lower supervisee views of Working Alliance. However, in dyads in which supervisor epistemology was naïve, Working Alliance was better when the supervisee's beliefs were also naïve. In other words, supervisee beliefs impacted Working Alliance in the direction of their own beliefs – more positive with those beliefs more similar to their own.

Hypothesis Four: Relationship Between Supervisee and Supervisor Working Alliance

The last question asked in this study was "what is the relationship between supervisee working alliance and supervisor working alliance?" Supervisee and supervisor Working Alliance were significantly related ($t = 5.72$, $p = .000$), as shown in Figure 15.

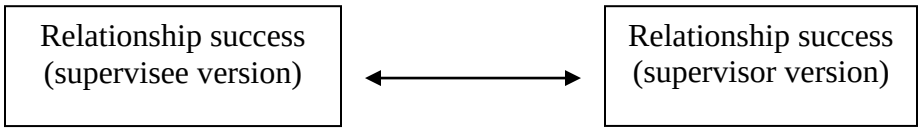

Figure 15. Relationship between supervisee and supervisor Working Alliance

In the next section, I will summarize the answers to my research questions and unexpected findings.

Summary of Chapter Four

In Chapter Four, I found that personal epistemology significantly influences Working Alliance. Table 27 summarizes the results of this first hypothesis as described in Chapter Four, level one. The first column lists the six steps in Level One. The second column identifies the significant and moderately significant epistemic predictors that were associated with Working Alliance. The third column illustrates the significant and moderately significant unexpected epistemic predictors that were associated with Working Alliance.

As hypothesized, personal epistemology was found to be significantly related to Working Alliance. Complex Certain Knowledge was the most consistent predictor of Working Alliance with four significant and marginally significant regressions in the study. Beliefs about complex Innate Ability and Quick Learning had a significant or moderate relationship with supervisee and supervisor Working Alliance. Supervisee complex Certain Knowledge predicted both supervisee and supervisor Working Alliance. Supervisee complex Innate Ability was associated with supervisee Working Alliance. Supervisor epistemology (complex Certain Knowledge, Innate Authority and Quick Learning) predicted both supervisee and/or supervisor Working Alliance. Unexpected findings included significant relationships between naïve epistemology and Working Alliance. Naïve supervisee and supervisor Omniscient Authority had a significant relationship with supervisor Working Alliance. This suggests that supervisees and

Table 27

Results of Level One: Influence of Epistemology on Working Alliance

Six Steps in Level One	Hypothesized Predictor	Unexpected Predictor
	Influence of Supervisee Epistemology on …	
Supervisee WA	Complex CK^	
	Complex IA^	
Supervisor WA	Complex CK**	naïve OA*
Sum of both WA's	Complex CK*	
	Influence of Supervisor Epistemology on …	
Supervisee WA	Complex CK^	naïve SK^
	Complex QL**	
Supervisor WA	Complex IA*	naïve OA*
Sum of both WA's	Complex QL**	

Note: ^p < .14; *p < .05; **p < .01; ***p < .001; WA = Working Alliance; SK = Simple Knowledge; CK = Certain Knowledge; OA = Omniscient Authority; IA = Innate Ability; QL = Quick Learning

supervisors agreed more on goals, tasks and bonds if they both believed that truth comes from omniscient authorities.

Second, I explored the influence of gender, age and education on epistemology as epistemology influenced Working Alliance. Overall, gender, age and education were related to epistemology in this study. Age and education were hypothesized to be associated with epistemology. For supervisees and supervisors, male gender was significantly related to naïve epistemology (naïve Simple and Certain Knowledge for supervisees, naïve Omniscient Authority and Innate Ability for supervisors). Unexpectedly, being a male gender supervisor was moderately significantly associated with supervisee and supervisor Working Alliance. Regarding age, older supervisees reported more complex Simple Knowledge, but unexpectedly, older supervisors reported more naïve Simple Knowledge, Certain Knowledge and Omniscient Authority. Regarding education, more educated supervisors reported more complex Simple Knowledge, Certain Knowledge and Omniscient Authority, but unexpectedly, more naïve Quick Learning. Also unexpectedly, masters-level supervisors reported significantly more positive Working Alliances with their supervisees than doctoral-level supervisors did. Regarding the influence of epistemology on Working Alliance after the effects of gender, age and education were considered, my hypothesis was confirmed. For supervisees, complex Certain Knowledge was moderately significantly related to supervisee Working Alliance and significantly associated with supervisor Working Alliance, after the effects of the three demographics were considered. Unexpectedly, supervisee naïve Omniscient Authority was significantly related to supervisor Working Alliance. For supervisors, complex Certain Knowledge and Quick Learning were

significantly or moderately significantly related to supervisee Working Alliance, after the effects of the three demographics were considered. Unexpectedly, supervisor naïve Simple Knowledge was moderately significantly related to supervisee Working Alliance.

Third, I examined the interaction of supervisee and supervisor epistemology on Working Alliance. As hypothesized, I found two epistemic interactions on supervisor Working Alliance (Simple Knowledge and Certain Knowledge), and two epistemic interactions on supervisee Working Alliance (Certain Knowledge and Innate Ability). These results suggest in dyads in which supervisor epistemology was complex, more naïve levels of supervisee beliefs were associated with lower supervisor and supervisee views of Working Alliance. However, in dyads in which supervisor epistemology was naive, Working Alliance was better when the supervisee's beliefs were also naïve. In other words, supervisee beliefs impacted Working Alliance in the direction of their own beliefs – more positive with those beliefs more similar to their own.

Fourth, as hypothesized, supervisee and supervisor perceptions of the Working Alliance were significantly related.

CHAPTER FIVE

DISCUSSION

This chapter discusses the implications of the results presented in Chapter 4. First, the findings of the main analyses will be discussed and possible explanations of the findings will be given. These findings will then be compared with previous literature. Next, methodological implications will be discussed. Finally limitations of the study will be described and suggestions for future research will be made.

Discussion of the Results of the Hypotheses

The main finding of this study was the significant relationship between personal epistemology and Working Alliance. Personal epistemology was conceptualized as a system of five more-or-less independent beliefs or dimensions (Schommer, 1990), specifically, Simple Knowledge, Certain Knowledge, Omniscient Authority, Innate Ability and Quick Learning. Working Alliance was defined in this study as the subject's composite score on the Working Alliance Inventory (Horvath & Greenberg, 1989). With these interpretations in place, I observed consistent patterns of relationship between each epistemology and at least one view of the Working Alliance between supervisor and supervisee.

Hypothesis One stated level of personal epistemology (i.e., at least one of the five dimensions listed above) would be positively related to the strength of the Working Alliance from six different perspectives: supervisee epistemology on supervisee Working Alliance, supervisee epistemology on supervisor Working Alliance, supervisee

epistemology on the sum of both of their Working Alliances, supervisor epistemology on supervisee Working Alliance, supervisor epistemology on supervisor Working Alliance and supervisor epistemology on the sum of both of their Working Alliances. This hypothesis was generally supported by the results. At least one dimension of complex epistemology was significantly or moderately related to Working Alliance from each of these six perspectives (see Table 27).

As hypothesized, supervisee complex Certain Knowledge beliefs were associated with more positive supervisee and supervisor Working Alliance. Supervisees who held beliefs such as "truth means different things to different people," "absolute moral truth does not exist" and "sometimes there are no right answers to life's big problems" described themselves as having a more positive Working Alliance with their supervisors than their peers who disagreed with those beliefs. Supervisees who held sophisticated Certain Knowledge beliefs were more likely to view their relationship with their supervisor positively. Interestingly, these supervisees with complex Certain Knowledge beliefs tended to have supervisors who also viewed their Working Alliance positively. So, supervisee complex Certain Knowledge beliefs were associated with a positive working relationship from the perspective of both the supervisee and the supervisor.

This finding has a level of face validity. We might imagine that two people who believe "truth means different things to different people" would have a respectful foundation from which to build a relationship. However, if either of them held the opposite belief, that "truth doesn't mean different things to different people: my truth is truth, and it applies to everyone," we might imagine a challenge in their relationship. We

might intuit potential problems when it comes to agreement on goals, tasks and bonds, which are the three basic elements of Working Alliance.

As hypothesized, supervisee complex Innate Ability was related to positive supervisee Working Alliance. Supervisor complex Innate Ability was related to positive supervisor Working Alliance. Their complex Innate Ability beliefs predicted their own views of Working Alliance. They disagreed with naïve Innate Ability beliefs such as "some people will never be smart no matter how hard they work," "how well you do in school depends on how smart you are" and "people can't do too much about how smart they are" predicted their own positive view of their Working Alliance with their dyad partner. It follows that these supervisees and supervisors believed "people *can* learn if they work hard," "you *can* do well in school even if you're not very smart," and "people *can* do a lot about how smart they are." Supervisees and supervisors who held these complex Innate Ability beliefs reported a more positive Working Alliance than those who didn't hold those beliefs.

In the epistemology field, it has been found that children who held complex Innate Ability beliefs, who believed the ability to learn improves with time, tended to stand up to challenges and try different paths to learning and accomplishment (Dweck & Bempechat (1983). Alternatively, those who believe that the ability to learn is fixed at birth tended to give up when faced with a difficult academic task. Similarly, regarding supervisees who hold complex Innate Ability beliefs, we might hypothesize that they would approach the challenge of learning in supervision with similar hope and determination. It follows that this hopeful and tenacious view toward learning would be related to a supervisee's positive agreement with a supervisor on goals, tasks and bonds.

It would also seem to follow that a supervisee who held naïve Innate Ability beliefs might also tend to give up more quickly in the face of a difficult practicum, which would naturally be reflected in their version of their relationship with a supervisor. Regarding supervisors who hold complex Innate Ability beliefs, who believe their supervisees' ability to learn improves with time, we might easily imagine they too would report a more positive Working Alliance.

At Level One there were a few surprises. Naïve supervisee and supervisor Omniscient Authority were significantly related to successful Working Alliance. Specifically, supervisee naïve Omniscient Authority related with supervisee Working Alliance, and supervisor naïve Omniscient Authority was associated with supervisor Working Alliance. Such supervisees and supervisors agreed with statements such as "people should always obey the law," "when someone in authority tells me what to do, I usually do it," and "people who question authority are trouble makers." This finding may reflect on the nature of the "change-inducing" relationship between supervisee and supervisor during practicum and internship. Supervisees are trying to learn the experiential side of counseling from a seasoned practitioner. Supervisors are trying to teach and model how to counsel effectively. It is not surprising in this context that they both might report more agreement on goals, tasks and bonds when they embrace these naïve Omniscient Authority beliefs. It follows that supervisees who believe "I should obey my supervisor" and "when my supervisor tells me what to do, I usually do it" and "supervisees who question their supervisors are troublemakers" would report a higher level of agreement with their supervisors on goals, tasks and bonds.

Supervisees may be vulnerable and likely to consider their supervisors as "omniscient" in their role as gatekeepers to the profession and experienced professionals. Similarly, it follows that supervisor beliefs such as "supervisees should always obey the law," "when a supervisor tells a supervisee what to do, they should do it" and "supervisees who question supervisors are troublemakers" would aid the process of agreement on goals, tasks and bonds (Working Alliance). Many supervisors may view these naïve Omniscient Authority beliefs as a foundation to effective supervision. Supervisors may find their naïve Omniscient Authority beliefs as adaptive to the change-inducing relationship during the practicum supervision stage.

Another surprising finding at Level One was that supervisor naïve Simple Knowledge related to more positive supervisee Working Alliance. These supervisors held epistemic beliefs such as "instructors should focus on facts instead of theories," "too many theories just complicate things," "the best ideas are often the most simple," and "it bothers me when instructors don't tell students the answers to complicated problems." This finding suggests that supervisees in practicum report a stronger Working Alliance when their supervisors provided simple, uncomplicated answers rather than the complexity of theories when trying to learn how to work with their clients. This observation may be another example of domain-specific epistemology. While supervisors may enjoy the complexity of theories and in-depth case conceptualization in their own world, they may realize how adaptive it is to present more simplified answers to supervisees. Supervisees reported a better Working Alliance with supervisors who kept it simple. These unexpected findings may affirm the recent research on epistemology that attends to the dimensionality of and disciplinary differences in

personal epistemology, suggesting that epistemological development may be domain specific and may differ by discipline (Hofer, 2000).

Supervisor complex Quick Learning was also significantly related to positive supervisee Working Alliance. Supervisors with complex Quick Learning beliefs disagreed with statements such as "students who learn things quickly are the most successful," "if you don't learn something quickly, you won't ever learn it," and "if a person tries too hard to understand a problem, they will most likely end up being confused." The opposite of these beliefs may be described as "even when students don't learn things quickly they can still be successful," "if you don't learn something quickly, you can still learn it," and "if a person tries hard to understand a problem, the answer may eventually become clear." It seems easy to imagine supervisees reporting better relationships with supervisors who hold these complex Quick Learning beliefs. In the literature, naïve Quick Learning beliefs have been associated with oversimplified conclusions and overconfidence (Schommer, 1990). It follows that supervisees would enjoy a better Working Alliance with supervisors who were not overly simplistic or overconfident. In this study, supervisees reported better Working Alliance when their supervisors were neither overly complex (e.g., see last paragraph) nor overly simplified.

Hypothesis Two stated age and education would relate to complexity in epistemology, gender would not, and epistemology would relate to Working Alliance after controlling for gender, age and education. In this study, gender, age and education were associated with epistemology, and epistemology was related to Working Alliance after controlling for gender, age and education.

Male supervisees reported significantly more naïve Simple Knowledge and Certain Knowledge beliefs. More male than female supervisees agreed with beliefs such as "instructors should focus on facts instead of theories" and "the best ideas are often the most simple," and disagreed with beliefs such as "you can study something for years and still not really understand it" and "the more you know about a topic the more there is to know." We might imagine these beliefs are a result of cultural influence, but further study and analysis would be needed to understand this finding. In the literature, the influence of gender on epistemology has shown mixed results.

Being a male supervisor in this study was associated with more positive supervisee and supervisor Working Alliance. There were 18 male supervisors serving 89 female and 18 male supervisees. This finding suggests that these male supervisors reported more positive Working Alliance with their supervisees than did female supervisors, and also that supervisees (most of which were female) described a more positive Working Alliance with male supervisors than with female supervisors. We might imagine that males and females enjoy each others' company in supervision, or that the male supervisors in this study were especially effective at relationships, or that these findings happened by chance, or a number of other cultural hypotheses, but further studies would be needed to better understand this finding.

As hypothesized, supervisee age was related to more complex Simple Knowledge and Certain Knowledge beliefs. Older supervisees tended to hold more complex Simple Knowledge beliefs such as "you can study something for years and still not really understand it" or "the more you know about a topic, the more there is to know," and Certain Beliefs such as "truth means different things to different people" and "sometimes

there are no right answers to life's big problems." It follows that older supervisees might welcome the complexity of knowledge as they face the rigors of a mid-life career transition. Having lived more years on the planet, they may have also learned that things are not as simple as they might think or prefer. It also follows that older supervisees might have been exposed to more experts who differ, leaving them with a more complex epistemology that observes things are not as certain as we once believed, as Perry (1970) suggested.

Supervisor age was unexpectedly related to more naïve Simple Knowledge, Certain Knowledge and Omniscient Authority beliefs. Older supervisors held more naïve Simple Knowledge beliefs such as "instructors should focus on facts instead of theories" and "too many theories just complicate things." This finding may reflect more on an older supervisor's experienced discernment in a practicum counseling setting rather than the supervisor's global view of this dimension of personal epistemology. A seasoned supervisor might appreciate the value of simplicity, especially for a supervisee in counseling practicum, over a less seasoned supervisor who might value giving supervisees more complex and comprehensive detail. Older supervisors also held more naïve Certain Knowledge beliefs such as disagreeing with "I like teachers who present several competing theories and let their students decide which is best" and "truth means different things to different people." Again, this issue may reflect more on the specific domain of counseling supervision than on the supervisor's general beliefs outside the counseling context.

Older supervisors tended to also hold naïve Omniscient Authority beliefs such as "people should always obey the law" and disagreed with "children should be allowed to

question their parents' authority." I imagine all three of these naïve beliefs reflect on the specific domain of counseling. Older supervisors may have found that simplicity works better in practicum than complexity, desiring not to overwhelm their supervisees. It may suggest that older supervisors were aware of the challenges of presenting competing theories to supervisees wrestling with pressures of the practicum experience, consequently opting to value and promote "certain" truths that come from "omniscient authorities" to facilitate the experiential learning process.

Supervisee education (bachelors vs. post-bachelors) was not found to be a significant predictor of supervisee or supervisor epistemology. Most supervisees (77%) held a bachelor's degree, and those who had more education did not differ significantly in epistemological beliefs from those who had less education. However, supervisor education (pre-doctoral vs. doctoral) was a significant predictor of supervisor epistemology, as hypothesized. More educated supervisors reported significantly more complex Simple Knowledge, Certain Knowledge and Omniscient Authority beliefs, but also more naïve Quick Learning beliefs. This finding means more educated supervisors were more likely to hold beliefs such as "the more you know about a topic, the more there is to know" (complex Simple Knowledge), "truth means different things to different people" (complex Certain Knowledge), "children should be allowed to question their parents' authority" (complex Omniscient Authority), and "students who learn things quickly are the most successful" (naïve Quick Learning). Researchers have consistently found that education is associated with complex epistemology, so the first three findings are what we would expect. The last finding is unexpected, and may suggest again that epistemology is domain-specific. More educated supervisors may have had experience

with supervisees over years of experience that would lead them in practicum to believe "if you haven't understood a chapter the first time through, going back over it won't help "or "students who learn things quickly are the most successful." This finding may indicate a domain-specific belief about counseling rather than a domain-general belief about life.

Doctoral-level supervisors also reported significantly poorer Working Alliance than Masters-level supervisors. This finding may reflect the private frustration of more educated supervisors who work with neophyte counselors in practicum. Or it may reflect on the practice of Masters-level supervisors to describe their Working Alliance with rose-colored glasses to help themselves feel better about themselves. In general, gender, age and education were associated with epistemology in this study.

Hypothesis Two also stated personal epistemology would relate to Working Alliance after controlling for age, education and gender. This hypothesis was also supported for both supervisee and supervisor personal epistemology. Regarding supervisee epistemology, after taking into account gender, age and education, complex Certain Knowledge was still moderately related to supervisee Working Alliance, complex Certain Knowledge was still significantly related to supervisor Working Alliance, and naïve Omniscient Authority was still significantly associated with supervisor Working Alliance. So supervisee personal epistemology continued to be associated with Working Alliance after controlling for gender, age and education.

Regarding supervisor epistemology, after taking into account gender, age and education, complex Certain Knowledge was still moderately related to supervisee Working Alliance, complex Quick Learning was still significantly associated with

supervisee Working Alliance, and naïve Simple Knowledge was still moderately related to supervisee Working Alliance. So supervisor personal epistemology continued to be associated with Working Alliance after controlling for gender, age and education.

Hypothesis Three stated that differing levels of epistemology between supervisees and supervisors would affect the Working Alliance differently. This hypothesis was also supported by the results. There were four significant interactions between personal epistemology and Working Alliance. There were two significant interactions of epistemology (Simple Knowledge and Certain Knowledge) on supervisor Working Alliance, and two significant interactions of epistemology (Certain Knowledge and Innate Ability) on supervisee Working Alliance. All four interactions told the same story: in dyads in which supervisor epistemology was complex, more naïve levels of supervisee beliefs were associated with lowere supervisor views of Working Alliance. However, in dyads in which supervisor epistemology was naïve, Working Alliance was better when the supervisee's beliefs were also naïve. In other words, supervisee beliefs impacted Working Alliance in the direction of their own beliefs – more positive with those beliefs more similar to their own. So supervisors with complex epistemology differentiated between supervisees holding complex and naïve epistemologies. Supervisors had better relationships with supervisees with complex epistemologies, and visa versa. Supervisors with naïve epistemology differentiated between supervisees with complex and naïve epistemologies, and had better relationships with those with naïve epistemologies.

In practical terms, complex epistemology supervisors enjoyed a more positive Working Alliance with complex epistemology supervisees than with naïve epistemology

supervisees. Naïve epistemology supervisors enjoyed a more positive Working Alliance with naïve epistemology supervisees than with complex epistemology supervisees. This finding demonstrates that the personal epistemology of the members in a counseling supervision dyad plays a significant role in their Working Alliance. Supervisors and supervisees enjoyed the most positive relationship success when their epistemic beliefs were similar. This finding suggests that supervision dyads which enjoy a strong Working Alliance are not necessarily operating from a complex set of epistemic assumptions. It may in fact imply the naïve is leading the naïve while both are enjoying the journey. This finding also suggests that supervision dyads which are not enjoying relationship success may suffer from significantly different epistemic assumptions. It should not be assumed that relationship challenges necessarily derive from naïve supervisees. The data show that supervisors sometimes hold naïve beliefs which would spell relationship dissatisfaction for complex supervisees. Based on this finding, if supervisors and supervisees were screened for complex epistemology, Working Alliance might improve as dyads operate from a more complex set of epistemic assumptions. Similarly, if universities were to teach or encourage or reinforce complex epistemology among supervisors and supervisees, Working Alliance could be enhanced and clients could be better served.

Hypothesis Four stated that supervisee Working Alliance will be significantly related to supervisor Working Alliance. This hypothesis was also soundly supported by the study. Supervisee perceptions of relationship success were significantly associated with supervisor perceptions of relationship success. This finding suggests that both supervisee and supervisor have a strong and related sense of their Working Alliance.

When one of them senses agreement regarding their goals, tasks and bonds, the other also senses that agreement. When they are not in agreement regarding those goals, tasks and bonds, they both seem to know it. In a field that prizes empathy, this significant finding seems logical and is consistent with my hypothesis.

The Relationship of the Results to Previous Theory or Research

This study focused on the relationship between personal epistemology and supervisory working alliance, which required a review of both in chapter two and suggests attention be given to both here in chapter five. While a relationship between these two variables may seem intuitive, no study to date has hypothesized a connection between them in the counseling mental health field, so these results have little against which to compare in the larger literature. This research affirms that epistemology can be measured in ways other than longitudinal and qualitative methods with a large sample size. This study also provides a baseline of epistemological beliefs among graduate students and supervisors in the counseling mental health field based theoretically on Schommer's (1990) conceptualization of epistemology as a system of more or less independent beliefs as distinct from a developmental sequence. Previous studies of epistemology in the mental health field have been based theoretically on developmental sequences, notably the Perry Scheme via Moore's (1989) "Learning Environment Preferences" (LEP) (Granello, 2002; McAuliffe & Lovell, 2006).

The overall results of this study confirm the hypothesis that complex personal epistemology is related to positive Working Alliance. The unexpected significant finding, that supervisee and supervisor naïve Omniscient Authority were related to

supervisor Working Alliance, may provide insight into one of the leading edges in personal epistemology research: the dimensionality and disciplinary differences in personal epistemology (Hofer, 2000). An underlying assumption of epistemology research and assessment instruments has been that epistemological theories and beliefs are domain general (Hofer, 2000). This assumption means that theories and beliefs that individuals hold about epistemology are general and that they transcend domains, with early roots in Piagetian theory (Hofer, 2000). The question of domain specificity has not received much attention until recently (Hofer, 2000). Current instruments measuring personal epistemology, including the EBI, are designed to assess general beliefs about knowledge and knowing, and items are therefore written in ways that suggest domain generality. When these domain-general instruments are used in domain-specific disciplines, unexpected responses can arise.

While the questions on the EBI are domain general, the subjects who completed the instrument were in the specific domain of mental health counseling. The domain-general instrument may not have adequately measured or differentiated between domain-general beliefs and beliefs pertinent to the specific domain of mental health counseling. Research on domain differences suggests that individuals may "hold a set of general epistemological beliefs, yet are likely to make distinctions about the application of these beliefs to particularly well-defined disciplinary areas" (Hofer, 2000, p. 384). This observation could explain why one of the dimensions of personal epistemology (naïve Omniscient Authority) among supervisees and supervisors was associated with relationship success.

Regarding Working Alliance, this study provides additional support for the growing body of literature that suggests individual differences contribute significantly to the supervisory relationship. Specifically, it adds personal epistemology to the list of personal characteristics that contribute to relationship success. This study also supports the studies of epistemology based on Perry's (1970) model (Granello, 2002; McAuliffe & Lovell, 2006) which suggest that more complex epistemology (or cognitive complexity or cognitive development) lead to competencies which are important to successful counseling. This study also affirms Friedlander and Ward's (1984) suggestion that supervisor behavior is affected by a number of factors, beginning with one's assumptive world.

Methodological Implications

One of the challenges of studying a system of epistemological beliefs in a particular context, such as counseling and mental health, is the risk that subjects will view the statements in context of their field, thereby introducing potential invalidity. In future research with the EBI, I would emphasize to subjects that EBI statements are statements about life in general, rather than about the counseling context in particular. Perhaps administering the EBI first and in a separate context from the WAI may also serve to explore and limit that potential confound.

Perhaps even more appropriately, a new measure could be designed to assess the domain-general and domain-specific beliefs about knowledge and knowing in the mental health field. Since the study of epistemology is still in its infancy, there is always room for more measurement sophistication. Modifying the EBI to be a tool designed

specifically for the mental health field might be of assistance to future researchers. Improving the EBI to achieve higher Alpha coefficient values might be another helpful contribution to the field.

Implications for Practice or Future Research

This study is a beginning that suggests sophistication in personal epistemology relates to relationship success between supervisors and supervisees. Where success is desired in the supervisory relationship, personal epistemology is of pertinent interest. University counseling departments could be invited to reflect on, explore and eventually publish their assumptions about truth. University professors could be invited to explore their own epistemic beliefs, and in turn, facilitate such exploration in their students who are potential supervisees and supervisors. Troubled supervisory relationships could be assisted through the lens of epistemology and invited to explore unwitting assumptions. A class on the "person of the therapist" could be taught, focusing on exploring and understanding personal epistemology of self and other. Each of these efforts have the potential of opening the eyes and broadening the horizons of people whose life's mission includes facilitating the opening of eyes and broadening the horizons of others. Sensitizing mental health practitioners to the hidden assumptions that lead them and the people they help to their views of truth could lead to a breakthrough in tolerance, respect and understanding.

Implications for future research include increasing the number of dyads in the study. One hundred subjects was considered the minimum to find usable results in exploring the relationship between personal epistemology and working alliance. Two or

three hundred would enhance the depth of the study. Replicating this study among a different population would also be useful to explore the generalizability of the findings.

Limitations

As with all studies, this study has several limitations. The sample was 83% female and 83% Caucasian, which triggers questions of the generalizability of the sample to a larger and more diverse population. The study used self-report instruments, which have the limitations inherent in all self-report instruments: the data are only as accurate as the subjects' perceptions and responses. In studies of epistemology, there are questions about whether epistemology can be assessed with paper and pencil (as distinct from the historical approach of longitudinal and qualitative research models). While the prolific use of the EBI in doctoral dissertations suggests a positive answer, it is still a question that needs more research. Perhaps one of the limitations of this paper and pencil approach to assessing epistemology is the possibility that supervisors completed the EBI not from their perspective as a human being on the planet, but as a supervisor of practicum students. This problem may be one of the reasons why supervisors occasionally seemed to favor naïve epistemic beliefs.

When I discovered the multiple interactions between supervisee and supervisor epistemology as they impacted Working Alliance, I was theoretically challenged to position one of their epistemologies as stable and the other as changeable to assist in the explanation of the finding. I hypothesized that supervisor epistemology was more likely the stable context. I considered that researchers in the field of personal epistemology have found that age and education were correlated with complex epistemology. I was

aware that supervisors in this study were generally older and more educated, held more complex epistemic beliefs, and therefore were probably more stable in those beliefs than supervisees. However, given my data, I had no way of knowing for sure which context was more stable. If supervisee epistemology were in fact more stable, the interaction would mean that in dyads in which supervisee epistemology was complex, more naïve levels of supervisor beliefs about epistemology were associated with lower supervisee views of Working Alliance. I hypothesize the multiple interactions suggest it may be valid both ways. Either way, the finding suggests that complex epistemology plays a significant role in the working alliance between supervisee and supervisor. Exploring the stability of supervisee and supervisor epistemology would be another area for further research.

Summary and Conclusion

Results of this study support the hypothesis stated in Chapter 1, that personal epistemology contributes to the Working Alliance between counseling supervisors and their supervisees. The study provides empirical support for the idea that Working Alliance is positively associated with complex personal epistemology.

These findings can be used to improve working relationships between supervisors and supervisees. In a university setting, professors may wish to include personal epistemology in the counseling and supervision curricula as a relevant contributor to Working Alliance. Discussions on the nature of knowledge and knowing are likely to be intriguing to graduate school students. Is knowledge about counseling absolute and unchanging or contextual and tentative? Do we encourage or question categorical

thinking? Is truth simple or complex? Does knowledge come from omniscient authorities or from interpersonal metalogue (Eriksen & McAuliffe, 2001)? Discussing these subjects in a supportive environment is one of the factors that facilitates the growth of personal epistemology (Perry, 1970). In a practicum setting, supervisors and supervisees could be encouraged to identify their own epistemic assumptions and share them with each other. Practicum instructors could assist supervisors and supervisees with challenged relationships to examine their challenges through an epistemic lens. In sessions, clients could be invited to explore their epistemic assumptions, especially where relationships are challenged. There would appear to be no limit to the application of personal epistemology in any relationship which involves a "collaboration for change" (Borden, 1983, p. 35).

Personal epistemology is important because one's personal and often unwitting assumptions about knowledge profoundly affect their conclusions about what is true. Epistemic beliefs about knowledge and knowing are utilized by all people as they engage in learning and knowing. In a world recently awakened to the reality that simple and certain beliefs which come from omniscient authorities can do significant harm (e.g., September 11, 2001), it seems important to give attention to this subject of epistemology and relationships. The counseling field in particular is devoted to doing no harm, so it seems valuable to explore new ways to prevent harm.

There are several future steps the academic world may wish to contemplate to increase knowledge on this subject. Replicating this study on diverse populations would provide information on the generalizability of the findings. Increasing the number of subjects in the study might help to identify further significant relationships. Exploring

the issue of domain specificity vs. generality in the counseling and supervision contexts would further identify relationships between epistemology and Working Alliance. Developing additional methods and approaches to exploring one's own personal epistemology might be a helpful step in improving relationships in supervision. Each of these steps would contribute to the advancement of knowledge in the fields of epistemology and supervision.

APPENDIX A

IRB APPROVAL LETTERS

Oakland UNIVERSITY

Institutional Review Board for the
Protection of Human Subjects

544 O'Dowd Hall
Rochester, Michigan 48309-4401
(248) 370-4898 Fax: (248) 370-2973

October 25, 2007

Professor Ross Flynn
School of Education

Reference: IRB application #3580 "Contribution of Supervisor and Supervisee Personal Epistemology to the Supervisory Working Alliance"

Dear Professor Flynn,

On behalf of the Institutional Review Board (IRB), responsible for the review of research involving human subjects, Dr. Christine Hansen, IRB Chair, has reviewed the original proposal, noted the revisions provided by you upon Chair's request, and determined that as defined in 45CFR46.101(b)(2) the above referenced project, as currently described, is **exempt** from IRB review. **The exemption is granted for one year starting 10/25/07 and ending 10/25/08.**

This exemption is made with the understanding that no changes may be made in the procedures to be followed until after such modifications have been submitted to the IRB for review and approval. If a consent form is required for your project, Please be sure your consent form includes the IRB contact name and telephone number (Dr. Christine Hansen, Chair, Oakland University Institutional Review Board for the Protection of Human Subjects, **248-370-2762**). **Researchers must retain a copy of the informed consent form in their files for three years and must provide a copy of the consent form to the subject.**

Any unanticipated problems involving risks to human subjects or serious adverse effects must be promptly reported to the IRB.

Two-months prior to the expiration of this approval you will receive notification of the need for updated information to be used for the project's continuing review. **When project is completed, please down load the IRB Completion Form from Human Subjects site at the Research webpage, complete and email it to me.** Thank you.

Sincerely,

Judette Haddad

Judette Haddad, Ph.D.
Regulatory Compliance Coordinator

APPENDIX B

PERMISSION LETTER FROM ADAM HORVATH, PHD
WORKING ALLIANCE INVENTORY

Ross L. Flynn, PhDc
LMFT, LPC, LLP, NCC
52659 Brookcrest
Shelby Township, Michigan 48316
586-242-5512
www.rossflynn.com

June 16, 2008

Dr. Adam O. Horvath, Ph.D.
Professor, Counselling Psychology
Simon Fraser University
8888 University Drive
Burnaby, BC V5A 1S6
Canada

Dear Dr. Horvath,

I am completing a doctoral dissertation at Oakland University in Rochester, Michigan, entitled "Contribution of Supervisor and Supervisee Personal Epistemology to the Supervisory Working Alliance." I would like your permission to reprint the *Working Alliance Inventory (Revised Edition)* in my dissertation.

The requested permission extends to any future revisions and editions of my dissertation, including non-exclusive world rights in all languages, and to the prospective publication of my dissertation by UMI. These rights will in no way restrict republication of the material in any other form by you or by others authorized by you. Your signing of this letter will also confirm that you own the copyright to the above-described material.

If these arrangements meet with your approval, please sign this letter where indicated below and return it to me in the enclosed return envelope. Thank you very much.

Sincerely,

Ross

PERMISSION GRANTED FOR THE
USE REQUESTED ABOVE:

Dr. Adam O. Horvath, Ph.D.

Date: July 6 2008

APPENDIX C

PERMISSION LETTER FROM LISA BENDIXEN, PHD
EPISTEMOLOGICAL BELIEFS INVENTORY (EBI)

Ross L. Flynn

From: lisa.bendixen@unlv.edu
Sent: Monday, June 16, 2008 4:20 PM
To: Ross L. Flynn
Subject: Re: EBI

Dear Ross,

You ceriianly have our (Gregg and myself) permission to use the EBI in any form.

Good luck with your research and thank you for your kind words!

Sincerely,

Lisa

Lisa D. Bendixen, Ph.D.
Associate Professor
Educational Psychology
UNLV

"Ross L. Flynn" <rossflynn@comcast.net>

"Ross L. Flynn" <rossflynn@comcast.net>	To<lisa.bendixen@unlv.edu>
	cc
	SubjectEBI
06/14/2008 07:24 PM	

Hello Dr. Bendixen,

I'm a doctoral candidate at Oakland University in Rochester, Michigan, studying personal epistemology. A few years ago I was in communication with Gregg Schraw, who sent me the 32-item EBI with guidelines and welcomed me to use it in my research. I am completing a doctoral dissertation entitled "Contribution of Supervisor and Supervisee Personal Epistemology to the Supervisory Working Alliance."

I can no longer seem to find Dr. Schraw, but I wanted to request permission to reprint the EBI in my dissertation. I notice that you and Michael Dunkle and Gregory Schraw have written a number of articles together over the years, so I imagine you might know from whom I might request permission.

Thank you for your helpful articles and significant contribution to the field of personal epistemology.

Warm regards,
Ross

Ross L. Flynn, PhDc
LMFT, LPC, LLP, NCC
www.rossflynn.com

6/16/2008

APPENDIX D

PERMISSION LETTER FROM BARBARA HOFER, PHD

Ross L. Flynn

From: Hofer, Barbara [bhofer@middlebury.edu]
Sent: Thursday, September 04, 2008 9:29 PM
To: Ross L. Flynn
Subject: Re: Permission

Dear Ross,
Thank you for your inquiry and your kind note. This sounds fine to me, although I'm not sure what the rules are from the journal. I believe if you were to have it printed elsewhere you would need permission from the Review of Ed Research, but I'm not sure how this works with dissertations. I would recommend that you contact the journal to make sure. You do have my permission.
Congratulations on getting to this important step in the dissertation process! I hope the defense goes well, and I look forward to learning more about your research.
Best wishes,
Barbara Hofer

--
Barbara K. Hofer, Ph.D.
Associate Professor
Department of Psychology
McCardell Bicentennial Hall
Middlebury College
Middlebury, VT 05753
(802) 443-2534
e-mail: bhofer@middlebury.edu

On 8/30/08 11:09 AM, "Ross L. Flynn" <rossflynn@comcast.net> wrote:

Hello Dr. Hofer,

I am completing a doctoral dissertation at Oakland University entitled "Contribution of Supervisor and Supervisee Personal Epistemology to the Supervisory Working Alliance." I would like your permission to reprint in my dissertation Table 1 on page 92 of your wonderful article (1997) "The Development of Epistemological Theories: Beliefs About Knowledge and Knowing and Their Relation to Learning."

If you approve, please let me know and I will send you a letter requesting your signature to place in my Appendix.

Thank you for all your hard work in personal epistemology. I believe I have read all of your published writings, and look forward to more. In my research I found significant relationships between personal epistemology and working alliance which I'm hoping will make a contribution to the field. I hope to defend within a few weeks.

Sincerely,

Ross

Ross L. Flynn, doctoral candidate
LMFT, LPC, LLP, NCC
www.rossflynn.com <http://www.rossflynn.com>

APPENDIX E

SAMPLE SIZE CALCULATION

What size sample do we need in our research study?
by Ary, Jacobs, Razavieh (1996), p. 193

N=1/delta squared times (z-alpha + z-beta)

Where

N=number needed in the sample
delta=the specified effect size
z-alpha=the z-score for the level of significance
z-beta=the z-score for the desired probability of rejecting the null hypothesis

N	Effect size	z-alpha		z-beta	
90	0.2	2.33	one-tailed .01 alpha	1.28	90% probability of rejecting null
62	0.2	1.645	one-tailed .05 alpha	0.84	80% probability of rejecting null
40	0.25	1.645	one-tailed .05 alpha	0.84	80% probability of rejecting null
110	0.15	1.645	one-tailed .05 alpha	0.84	80% probability of rejecting null
361	0.1	2.33	one-tailed .01 alpha	1.28	90% probability of rejecting null
81	0.2	1.96	two-tailed .05 alpha	1.28	90% probability of rejecting null
70	0.2	1.96	two-tailed .05 alpha	0.84	80% probability of rejecting null
97	0.2	2.58	two-tailed .01 alpha	1.28	90% probability of rejecting null
86	0.2	2.58	two-tailed .01 alpha	0.84	80% probability of rejecting null

SAMPLE SIZE CALCULATION

(A) Rules of thumb: 10 participants for each variable in multiple regression (Heppner, p. 115). This research included two sets of eight independent variables (age, gender, education, Simple Knowledge, Certain Knowledge, Omniscient Authority, Innate Ability and Quick Learning) and one dependent variable (Working Alliance), a total of nine variables for supervisees and nine variables for supervisees. This rule of thumb would suggest 90 participants per set.

(B) Past studies:

a. Ravindran (2000), EBI, n=101, 5 Ivs, 3 DVs, M, SD, range, Cronbach's alpha, multiple regression analyses;
b. Huglin (2003), EBI, n=?, 4Ivs, 5DVs, univariate analysis of variance;
c. Johnson, R (2002), EBI, n=?, 5Ivs, ?DVs;
d. McLeod, C (2002), EBI, n=?, 4Ivs, 5DVs;
e. Hofer, B (1997), EQ, n=326;
f. Peterson, A (1995), LEP, n=128, 2x3 factorial design;
g. Vincent, N. (1993), PEP, n=397;
h. Lyddon, W (1989), PEP, n=92;
i. Sutphin, A (2003), EQ, n=53;
j. Schraw, Bendixen, Dunkle (2001), EBI, EQ, n=160;

(C) Power analysis:

a. What is the effect size of IV's of interest in previous studies similar to mine (i.e., how much variance is accounted for by the independent variable on the dependent variable, or strength of association) (small, med or large). In this study, I specified an effect size of .20 (i.e., $1/5^{th}$ of a standard deviation would be meaningful, let's say);
b. Type of statistical analyses I'll utilize: multiple regression;
c. Alpha level or significance level I'll be using (the more participants, the more power I have to find an effect): a two-tailed .05 alpha;
d. Level of power is expressed as a probability (e.g., 80), means with *x* sample size I'll be able to detect differences, if they exist, 80% of the time: I prefer 95% probability of rejecting the null; 100 participants ideal

APPENDIX F

EPISTEMOLOGICAL BELIEFS INVENTORY (EBI)

EPISTEMOLOGICAL BELIEFS INVENTORY

In this part, we want you to indicate how strongly you agree or disagree with each of the statements listed below. Please circle the number that best corresponds to the strength of your belief.

		Strongly Disagree				*Strongly Agree*
1	It bothers me when instructors don't tell students the answers to complicated problems.	1	2	3	4	5
2	Truth means different things to different people.	1	2	3	4	5
3	Students who learn things quickly are the most successful.	1	2	3	4	5
4	People should always obey the law.	1	2	3	4	5
5	Some people will never be smart no matter how hard they work.	1	2	3	4	5
6	Absolute moral truth does not exist.	1	2	3	4	5
7	Parents should teach their children all there is to know about life.	1	2	3	4	5
8	Really smart students don't have to work as hard to do well in school.	1	2	3	4	5
9	If a person tries too hard to understand a problem, they will most likely end up being confused.	1	2	3	4	5
10	Too many theories just complicate things.	1	2	3	4	5
11	The best ideas are often the most simple.	1	2	3	4	5
12	People can't do too much about how smart they are.	1	2	3	4	5
13	Instructors should focus on facts instead of theories.	1	2	3	4	5
14	I like teachers who present several competing theories and let their students decide which is best.	1	2	3	4	5
15	How well you do in school depends on how smart you are.	1	2	3	4	5
16	If you don't learn something quickly, you won't ever learn it.	1	2	3	4	5
17	Some people just have a knack for learning and others don't.	1	2	3	4	5
18	Things are simpler than most professors would have you believe.	1	2	3	4	5
19	If two people are arguing about something, at least one of them must be wrong.	1	2	3	4	5
20	Children should be allowed to question their parents' authority.	1	2	3	4	5
21	If you haven't understood a chapter the first time through, going back over it won't help.	1	2	3	4	5
22	Science is easy to understand because it contains so many facts.	1	2	3	4	5
23	The moral rules I live by apply to everyone.	1	2	3	4	5
24	The more you know about a topic, the more there is to know.	1	2	3	4	5
25	What is true today will be true tomorrow.	1	2	3	4	5
26	Smart people are born that way.	1	2	3	4	5
27	When someone in authority tells me what to do, I usually do it.	1	2	3	4	5
28	People who question authority are trouble makers.	1	2	3	4	5
29	Working on a problem with no quick solution is a waste of time.	1	2	3	4	5
30	You can study something for years and still not really understand it.	1	2	3	4	5
31	Sometimes there are no right answers to life's big problems.	1	2	3	4	5
32	Some people are born with special gifts and talents.	1	2	3	4	5

APPENDIX G

EBI KEY

EPISTEMOLOGICAL BELIEFS INVENTORY: KEY

1. It bothers me when instructors don't tell students the answers to complicated problems SK
2. Truth means different things to different people CK
3. Students who learn things quickly are the most successful QL
4. People should always obey the law OA
5. Some people will never be smart no matter how hard they work IA
6. Absolute moral truth does not exist CK
7. Parents should teach their children all there is to know about life OA
8. Really smart students don't have to work as hard to do well in school IA
9. If a person tries too hard to understand a problem, they will most likely end up being confused QL
10. Too many theories just complicate things SK
11. The best ideas are often the most simple SK
12. People can't do too much about how smart they are IA
13. Instructors should focus on facts instead of theories SK
14. I like teachers who present several competing theories and let their students decide which is best CK
15. How well you do in school depends on how smart you are IA
16. If you don't learn something quickly, you won't ever learn it QL
17. Some people just have a knack for learning and others don't IA
18. Things are simpler than most professors would have you believe SK
19. If two people are arguing about something, at least one of them must be wrong CK
20. Children should be allowed to question their parents' authority OA
21. If you haven't understood a chapter the first time through, going back over it won't help QL
22. Science is easy to understand because it contains so many facts SK
23. The moral rules I live by apply to everyone CK
24. The more you know about a topic, the more there is to know SK
25. What is true today will be true tomorrow CK
26. Smart people are born that way IA
27. When someone in authority tells me what to do, I usually do it OA
28. People who question authority are trouble makers OA
29. Working on a problem with no quick solution is a waste of time QL
30. You can study something for years and still not really understand it SK
31. Sometimes there are no right answers to life's big problems CK
32. Some people are born with special gifts and talents IA

SK = simple knowledge (1,10,11,13,18,22,24,30)
CK = certain knowledge (2,6,14,19,23,25,30,31)
IA = innate ability (5,8,12,15,17,26,32)
OA = omniscient authority (4,7,20,27,28)
QL = quick learning (3,9,16,21,29)
Reverse code to 1 = naïve beliefs: 2,6,14,20,24,30,31

APPENDIX H

EBI MEANS & STANDARD DEVIATIONS

EPISTEMOLOGICAL BELIEFS INVENTORY
Means and Standard Deviations
Supervisor, Supervisee (OR, EE)
(1 = complex beliefs, 5 = naïve beliefs)

1. It bothers me when instructors don't tell students the answers to complicated problems SK (OR M = 2.85, SD = .867; EE M = 3.25, SD = .978)
*2. Truth means different things to different people CK (OR M = 4.27, SD = 1.087; EE = 4.41, SD = .857)
3. Students who learn things quickly are the most successful QL (OR M = 2.39, SD = 1.053; EE = 2.34, SD = .939)
4. People should always obey the law OA (OR M = 3.08, SD = .972; EE M = 3.49, .886)
5. Some people will never be smart no matter how hard they work IA (OR M = 2.21, SD = .932; EE M = 2.46, SD = 1.140)
*6. Absolute moral truth does not exist CK (OR M = 3.09, SD = 1.313; EE M = 2.79, SD = 1.242)
7. Parents should teach their children all there is to know about life OA (OR M = 2.61, SD = .810; EE M = 2.84, SD = 1.098)
8. Really smart students don't have to work as hard to do well in school IA (OR M = 2.54, SD = 1.066; EE M = 2.81, SD = 1.218)
9. If a person tries too hard to understand a problem, they will most likely end up being confused QL (OR M = 2.27, SD = 1.033; EE M = 2.41, SD = .890)
10. Too many theories just complicate things SK (OR M = 2.46, SD = 1.348; 2.84, SD = 1.065)
11. The best ideas are often the most simple SK (OR M = 3.76, SD = .642; EE M = 3.65, SD = .840)
12. People can't do too much about how smart they are IA (OR M = 2.25, SD = .891; EE M = 2.56, SD = 1.011)
13. Instructors should focus on facts instead of theories SK (OR M = 2.19, SD = .881; EE M = 2.40, SD = .923)
*14. I like teachers who present several competing theories and let their students decide which is best CK (OR M = 4.33, SD = .762; EE M = 4.12, SD = .855)
15. How well you do in school depends on how smart you are IA (OR M = 2.39, SD = 1.031; EE M = 2.36, SD = .915)
16. If you don't learn something quickly, you won't ever learn it QL (OR M = 1.48, SD = .588; EE M = 1.63, SD = .694)
17. Some people just have a knack for learning and others don't IA (OR M = 2.58, SD = .836; EE M = 3.17, SD = 1.005)
18. Things are simpler than most professors would have you believe SK (OR M = 2.29, SD = .836; EE M = 2.56, SD = .863)
19. If two people are arguing about something, at least one of them must be wrong CK (OR M = 1.37, SD = .694; EE M = 1.66, SD = .800)
*20. Children should be allowed to question their parents' authority OA (OR M = 3.58, SD = .912; EE M = 3.30, SD = .997)

21. If you haven't understood a chapter the first time through, going back over it won't help QL (OR M = 1.40, SD = .493; EE M = 1.52, SD = .744)
22. Science is easy to understand because it contains so many facts SK (OR M = 2.31, SD = .782; EE M = 2.36, SD = 1.032)
23. The moral rules I live by apply to everyone CK (OR M = 2.06, SD = .867; EE M = 2.07, SD = .997)
*24. The more you know about a topic, the more there is to know SK (OR M = 4.26, SD = .781; EE M = 3.93, SD = .723)
25. What is true today will be true tomorrow CK (OR M = 2.41, SD = 1.107; EE M = 2.21, SD = .851)
26. Smart people are born that way IA (OR M = 2.53, SD = .904; EE M = 2.59, SD = .983)
27. When someone in authority tells me what to do, I usually do it OA (OR M = 3.31, SD = .732; EE M = 3.55, SD = .804)
28. People who question authority are trouble makers OA (OR M = 2.32, SD = .938; EE M = 2.14, SD = .693)
29. Working on a problem with no quick solution is a waste of time QL (OR M = 1.44, SD = .517; EE M = 1.57, SD = .631)
*30. You can study something for years and still not really understand it SK (OR M = 3.93, SD = .773; EE M = 3.96, SD = .800)
*31. Sometimes there are no right answers to life's big problems CK (OR M = 4.26, SD = .915; EE M = 4.33, SD = .798)
32. Some people are born with special gifts and talents IA (OR M = 4.26, SD = .649; EE M = 4.48, SD = .635)

*Reverse code to 1 = naïve beliefs

Analysis of EBI Means & SD between OR & EE

Strongest disagreement btw OR & EE

17 Some people just have a knack for learning and others [POSSIBLE MEANING: supervisees agreed with this more than supervisors, suggesting supervisors assumed accomplishment had more to do with personal choices; supervisees assumed more often accomplishment derived from innate ability]

4 People should always obey the law [POSSIBLE MEANING: supervisees believed this more often than supervisees, perhaps indicating the context of practicum, and their mindset to do what they were "supposed" to do]

1 It bothers me when instructors don't tell students the answers to complicated problems [POSSIBLE MEANING: supervisees wanted instructors to tell them the answers to complicated problems, which makes sense considering the practicum context]

10 Too many theories just complicate things [POSSIBLE MEANING: supervisees tended to agree with this more, which may reflect their reality in a practicum setting: "supervisor, can you tell me what to do here instead of talking to me about theories?"]

Most agreement btw OR & EE

23 The moral rules I live by apply to everyone
15 How well you do in school depends on how smart you are
3 Students who learn things quickly are the most successful
22 Science is easy to understand because it contains so many facts

Beliefs when OR was more naïve than EE

2 Truth means different things to different people
3 Students who learn things quickly are the most successful
6 Absolute moral truth does not exist
11 The best ideas are often the most simple
15 How well you do in school depends on how smart you are
25 What is true today will be true tomorrow
28 People who question authority are trouble makers
30 You can study something for years and still not really understand it
31 Sometimes there are no right answers to life's big problems

OR most naïve belief (notice, same as EE)

32 Some people are born with special gifts and talents
11 The best ideas are often the most simple
27 When someone in authority tells me what to do, I usually do it
4 People should always obey the law

OR most complex belief

14 I like teachers who present several competing theories and let their students decide which is best
2 Truth means different things to different people
24 The more you know about a topic, the more there is to know
31 Sometimes there are no right answers to life's big problems

EE most naïve belief (notice, same as OR)

32 Some people are born with special gifts and talents
11 The best ideas are often the most simple
27 When someone in authority tells me what to do, I usually do it
4 People should always obey the law

EE most complex belief

2 Truth means different things to different people
31 Sometimes there are no right answers to life's big problems
14 I like teachers who present several competing theories and let their students decide which is best
30 You can study something for years and still not really understand it

OR largest SD (most disagreement among supervisors)

10 Too many theories just complicate things
6 Absolute moral truth does not exist
25 What is true today will be true tomorrow
2 Truth means different things to different people

EE largest SD (most disagreement among supervisees)

6 Absolute moral truth does not exist
8 Really smart students don't have to work as hard to do well in school
5 Some people will never be smart no matter how hard they work
7 Parents should teach their children all there is to know about life

OR smallest SD (most agreement among supervisors)

21 If you haven't understood a chapter the first time through, going back over it won't help
29 Working on a problem with no quick solution is a waste of time
16 If you don't learn something quickly, you won't ever learn it
11 The best ideas are often the most simple

EE smallest SD (most agreement among supervisees)

29 Working on a problem with no quick solution is a waste of time
32 Some people are born with special gifts and talents
28 People who question authority are trouble makers
16 If you don't learn something quickly, you won't ever learn it

APPENDIX I

WORKING ALLIANCE INVENTORY, REVISED EDITION (WAI) SUPERVISOR'S FORM

WORKING ALLIANCE INVENTORY
Supervisor's Form

The following sentences describe some of the different ways a person might think or feel about his or her supervisee. As you read the sentences, mentally insert the name of your supervisee in place of _____ in the text. For each statement, there is a 7-point scale. If the statement describes the way you *always* feel (or think), circle the number 7; if it *never* applies to you, circle the number 1. Use the numbers in between to describe the variations between these extremes. Please work fast: your first impressions are the ones we would like to have. PLEASE DO NOT FAIL TO RESPOND TO *EVERY* ITEM. Thank you.

		Never	Rarely	Occasionally	Sometimes	Often	Very Often	Always
1	I feel uncomfortable with _____.	1	2	3	4	5	6	7
2	_____ and I agree about the steps to be taken to improve his/her work as a therapist.	1	2	3	4	5	6	7
3	I have some concerns about the outcome of these sessions.	1	2	3	4	5	6	7
4	_____ and I both feel confident about the usefulness of our current activity in supervision.	1	2	3	4	5	6	7
5	_____ and I have a common perception of her/his goals.	1	2	3	4	5	6	7
6	I feel I really understand _____.	1	2	3	4	5	6	7
7	_____ finds what we are doing in supervision confusing.	1	2	3	4	5	6	7
8	I believe _____ likes me.	1	2	3	4	5	6	7
9	I sense a need to clarify the purpose of our sessions for _____.	1	2	3	4	5	6	7
10	I have some disagreements with _____ about the goals of these sessions.	1	2	3	4	5	6	7
11	I believe that the time ___ and I are spending together is not spent efficiently.	1	2	3	4	5	6	7
12	I have doubts about what we are trying to accomplish in supervision.	1	2	3	4	5	6	7
13	I am clear and explicit about what _____'s responsibilities are in supervision.	1	2	3	4	5	6	7
14	The current goals of these sessions are important for _____.	1	2	3	4	5	6	7
15	I find that what _____ and I are doing in supervision is unrelated to his/her current concerns.	1	2	3	4	5	6	7
16	I feel confident that the things we do in supervision will help _____ to accomplish the changes he/she desires.	1	2	3	4	5	6	7
17	I am genuinely concerned for _____'s welfare.	1	2	3	4	5	6	7
18	I am clear as to what I expect _____ to do in these sessions.	1	2	3	4	5	6	7
19	_____ and I respect each other.	1	2	3	4	5	6	7
20	I feel that I am not totally honest about my feelings toward _____.	1	2	3	4	5	6	7
21	I am confident in my ability to help _____.	1	2	3	4	5	6	7
22	We are working toward mutually agreed upon goals.	1	2	3	4	5	6	7
23	I appreciate _____ as a person.	1	2	3	4	5	6	7
24	We agree on what is important for _____ to work on.	1	2	3	4	5	6	7
25	As a result of these sessions, _____ is clearer as to how he/she might be able to improve his/her work as a therapist.	1	2	3	4	5	6	7
26	_____ and I have built a mutual trust.	1	2	3	4	5	6	7
27	_____ and I have different ideas on what his/her learning needs are.	1	2	3	4	5	6	7
28	Our relationship is important to _____.	1	2	3	4	5	6	7
29	_____ has some fears that if she/he says or does the wrong things I will stop working with him/her.	1	2	3	4	5	6	7
30	_____ and I have collaborated in setting goals for these sessions.	1	2	3	4	5	6	7
31	_____ is frustrated by what I am asking him/her to do in supervision.	1	2	3	4	5	6	7
32	We have established a good understanding between us of the kind of changes that would be good for _____.	1	2	3	4	5	6	7
33	The things that we are doing in supervision don't make much sense to _____.	1	2	3	4	5	6	7
34	_____ doesn't know what to expect as the result of supervision.	1	2	3	4	5	6	7
35	_____ believes the way we are working with his/her issues is correct.	1	2	3	4	5	6	7
36	I respect _____ even when she/he does things I do not approve of.	1	2	3	4	5	6	7

APPENDIX J

WORKING ALLIANCE INVENTORY, REVISED EDITION (WAI)
SUPERVISEE'S FORM

WORKING ALLIANCE INVENTORY
Supervisee's Form

The following sentences describe some of the different ways a person might think or feel about his or her supervisor. As you read the sentences, mentally insert the name of your supervisor in place of _____ in the text. For each statement, there is a 7-point scale. If the statement describes the way you *always* feel (or think), circle the number 7; if it *never* applies to you, circle the number 1. Use the numbers in between to describe the variations between these extremes. Please work fast: your first impressions are the ones we would like to have. PLEASE DO NOT FAIL TO RESPOND TO *EVERY* ITEM. Thank you.

		Never	Rarely	Occasionally	Sometimes	Often	Very Often	Always
1	I feel uncomfortable with _____.	1	2	3	4	5	6	7
2	_____ and I agree about the things I will need to do to improve my abilities as a therapist.	1	2	3	4	5	6	7
3	I am worried about the outcome of these sessions.	1	2	3	4	5	6	7
4	What I am doing in supervision gives me new ways of looking at how I approach my work as a therapist.	1	2	3	4	5	6	7
5	_____ and I understand each other.	1	2	3	4	5	6	7
6	_____ perceives accurately what my goals are.	1	2	3	4	5	6	7
7	I find what I am doing in supervision confusing.	1	2	3	4	5	6	7
8	I believe _____ likes me.	1	2	3	4	5	6	7
9	I wish _____ and I could clarify the purpose of our sessions.	1	2	3	4	5	6	7
10	I disagree with _____ about what I ought to get out of supervision.	1	2	3	4	5	6	7
11	I believe that the time _____ and I are spending together is not spent efficiently.	1	2	3	4	5	6	7
12	_____ doesn't understand what I am trying to accomplish in supervision.	1	2	3	4	5	6	7
13	I am clear on what my responsibilities are in supervision.	1	2	3	4	5	6	7
14	The goals of these sessions are important to me.	1	2	3	4	5	6	7
15	I find that what _____ and I are doing in supervision is unrelated to my concerns.	1	2	3	4	5	6	7
16	I feel the things I do in supervision will help me to improve as a therapist.	1	2	3	4	5	6	7
17	I believe _____ is genuinely concerned for my welfare.	1	2	3	4	5	6	7
18	I am clear as to what _____ wants me to do in these sessions.	1	2	3	4	5	6	7
19	_____ and I respect each other.	1	2	3	4	5	6	7
20	I feel that _____ is not totally honest about his/her feelings toward me.	1	2	3	4	5	6	7
21	I am confident in _____'s ability to help me.	1	2	3	4	5	6	7
22	_____ and I are working toward mutually agreed upon goals.	1	2	3	4	5	6	7
23	I feel that _____ appreciates me.	1	2	3	4	5	6	7
24	We agree on what is important for me to work on.	1	2	3	4	5	6	7
25	As a result of these sessions, I am clearer as to how I might be able to improve my work as a therapist.	1	2	3	4	5	6	7
26	_____ and I trust one another.	1	2	3	4	5	6	7
27	_____ and I have different ideas on what my difficulties are.	1	2	3	4	5	6	7
28	My relationship with _____ is very important to me.	1	2	3	4	5	6	7
29	I have the feeling that if I say or do the wrong things, _____ will stop supervising me.	1	2	3	4	5	6	7
30	_____ and I collaborate on setting goals for supervision.	1	2	3	4	5	6	7
31	I am frustrated by the things I am doing in supervision.	1	2	3	4	5	6	7
32	We have established a good understanding of the kind of changes that would be good for my work as a therapist.	1	2	3	4	5	6	7
33	The things that _____ is asking me to do don't make sense to me.	1	2	3	4	5	6	7
34	I don't know what to expect as the result of my supervision.	1	2	3	4	5	6	7
35	I believe the way we are working in supervision is correct.	1	2	3	4	5	6	7
36	I feel _____ cares about me even when I do things that he/she does not approve of.	1	2	3	4	5	6	7

APPENDIX K

WAI KEY

WORKING ALLIANCE INVENTORY
Scoring Key (both supervisor and supervisee forms)

Task: 2, 4, 7*, 11*, 13, 15*, 16, 18, 24, 31*, 33*, 35
Bond: 1*, 5, 8, 17, 19, 20*, 21, 23, 26, 28, 29*, 36
Goals: 3*, 6, 9*, 10*, 12*, 14, 22, 25, 27*, 30, 32, 34*
Note: Items marked with asterisk (*) are scored in reverse direction

(Baker, 1990; Horvath, 1982; Horvath & Greenberg, 1989)

APPENDIX L

WAI MEANS & STANDARD DEVIATIONS

WORKING ALLIANCE INVENTORY (WAI)
Means & Standard Deviations
Supervisor, Supervisee (OR, EE)
1 = worse relationship, 7 = better relationship

*1 I feel uncomfortable with _____. (OR M = 3.03, SD = 2.085; EE M = 3.83, SD = 2.251)

2 _____ and I agree about the steps to be taken to improve his/her work as a therapist. (OR M = 5.66, SD = 1.086; EE M = 5.55, SD = 1.015)

*3 I have some concerns about the outcome of these sessions. (OR M = 2.46, SD = 1.376; EE M = 2.48, SD = 1.468)

4 _____ and I both feel confident about the usefulness of our current activity in supervision. (OR M = 5.65, SD = 1.207; EE M = 5.63, SD = 1.217)

5 _____ and I have a common perception of her/his goals. (OR M = 5.66, SD = 1.004; EE M = 5.27, SD = 1.306)

6 I feel I really understand _____. (OR M = 5.58, SD = 1.010; EE M = 5.24, SD = 1.362)

*7 _____ finds what we are doing in supervision confusing. (OR M = 2.36, SD = 1.168; EE M = 2.31, SD = 1.495)

8 I believe _____ likes me. (OR M = 5.66, SD = 1.018; EE M = 5.51, SD = 1.296)

*9 I sense a need to clarify the purpose of our sessions for _____. (OR M = 2.61, SD = 1.559; EE M = 2.63, SD = 1.689)

*10 I have some disagreements with _____ about the goals of these sessions. (OR M = 2.07, SD = 1.319; EE M = 1.96, SD = 1.266)

*11 I believe that the time ___ and I are spending together is not spent efficiently. (OR M = 2.10, SD = 1.247; EE M = 2.44, SD = 1.700)

*12 I have doubts about what we are trying to accomplish in supervision. (OR M = 1.94, SD = 1.302; EE M = 2.07, SD = 1.294)

13 I am clear and explicit about what _____'s responsibilities are in supervision. (OR M = 5.93, SD = 1.044; EE M = 5.52, SD = 1.402)

14 The current goals of these sessions are important for _____. (OR M = 5.90, SD = 1.121; EE M = 6.24, SD = .940)

*15 I find that what _____ and I are doing in supervision is unrelated to his/her current concerns. (OR M = 1.92, SD = 1.065; EE M = 2.07, SD = 1.261)

16 I feel confident that the things we do in supervision will help _____ to accomplish the changes he/she desires. (OR M = 5.79, SD = 1.064; EE M = 5.97, SD = 1.262)

17 I am genuinely concerned for _____'s welfare. (OR M = 6.04, SD = 1.676; EE M = 5.93, SD = 1.385)

18 I am clear as to what I expect _____ to do in these sessions. (OR M = 5.96, SD = .941; EE M = 5.35, SD = 1.518)

19 _____ and I respect each other. (OR M = 6.40, SD = .858; EE M = 6.30, SD = .983)

*20 I feel that I am not totally honest about my feelings toward _____. (OR M = 2.31, SD = 1.824; EE M = 2.29, SD = 1.621)

21 I am confident in my ability to help _____. (OR M = 5.91, SD = .947; EE M = 5.77, SD = 1.364)

22 We are working toward mutually agreed upon goals. (OR M = 5.72, SD = 1.053; EE M = 5.54, SD = 1.382)

23 I appreciate _____ as a person. (OR M = 6.42, SD = .869; EE M = 5.39, SD = 1.516)

24 We agree on what is important for _____ to work on. (OR M = 5.75, SD = 1.056; EE M = 5.68, SD = 1.121)

25 As a result of these sessions, _____ is clearer as to how he/she might be able to improve his/her work as a therapist. (OR M = 5.72, SD = 1.071; EE M = 5.72, SD = 1.406)

26 _____ and I have built a mutual trust. (OR M = 6.11, SD = 1.127; EE M = 5.81, SD = 1.290)

*27 _____ and I have different ideas on what his/her learning needs are. (OR M = 2.62, SD = 1.490; EE M = 2.64, SD = 1.388)

28 Our relationship is important to _____. (OR M = 5.76, SD = 1.250; EE M = 5.42, SD = 1.524)

*29 _____ has some fears that if she/he says or does the wrong things I will stop working with him/her. (OR M = 1.75, SD = 1.113; EE M = 1.46, SD = 1.184)

30 _____ and I have collaborated in setting goals for these sessions. (OR M = 5.64, SD = 1.071; EE M = 4.82, SD = 1.804)

*31 _____ is frustrated by what I am asking him/her to do in supervision. (OR M = 2.36, SD = 1.290; EE M = 2.31, SD = 1.569)

32 We have established a good understanding between us of the kind of changes that would be good for _____. (OR M = 5.79, SD = 1.044; EE M = 5.38, SD = 1.515)

*33 The things that we are doing in supervision don't make much sense to _____. (OR M = 1.87, SD = 1.074; EE M = 2.24, SD = 1.727)

*34 _____ doesn't know what to expect as the result of supervision. (OR M = 1.77, SD = .875; EE M = 2.31, SD = 1.698)

35 _____ believes the way we are working with his/her issues is correct. (OR M = 5.64, SD = 1.151; EE M = 5.32, SD = 1.644)

36 I respect _____ even when she/he does things I do not approve of. (OR M = 6.52, SD = .692; EE M = 5.49, SD = 1.526)

Note: Items marked with asterisk (*) are scored in reverse direction

<u>Strongest disagreement btw OR & EE</u>

1 I feel uncomfortable with ____.

30 _____ and I have collaborated in setting goals for these sessions.

18 I am clear as to what I expect _____ to do in these sessions.

I am clear as to what _____ wants me to do in these sessions.

Closest agreement btw OR & EE

25 As a result of these sessions, _____ is clearer as to how he/she might be able to improve his/her work as a therapist.

4 _____ and I both feel confident about the usefulness of our current activity in supervision.

9 I sense a need to clarify the purpose of our sessions for _____.

20 I feel that I am not totally honest about my feelings toward _____.

27 _____ and I have different ideas on what his/her learning needs are.

OR's version of alliance was stronger than EE's

1, 2, 3, 4, 5, 6, 8, 9, 11, 12, 13, 15, 17, 18, 19, 21, 22, 23, 24, 26, 27, 28, 30, 32, 33, 34, 35, 36 (30:6, i.e., supervisor felt the alliance was strong five times more frequently than the supervisee felt)

EE's version of alliance was stronger than OR's

7 I find what I am doing in supervision confusing.

10 I disagree with _____ about what I ought to get out of supervision.

14 The goals of these sessions are important to me.

16 I feel the things I do in supervision will help me to improve as a therapist.

20 I feel that _____ is not totally honest about his/her feelings toward me.

29 I have the feeling that if I say or do the wrong things, _____ will stop supervising me.

31 I am frustrated by the things I am doing in supervision.

OR version of worst alliance

1 I feel uncomfortable with _____.

27 _____ and I have different ideas on what his/her learning needs are.

9 I sense a need to clarify the purpose of our sessions for _____.

OR version of best alliance

36 I respect _____ even when she/he does things I do not approve of.

23 I appreciate _____ as a person

19 _____ and I respect each other.

EE version of worst alliance

1 I feel uncomfortable with _____.

27 _____ and I have different ideas on what his/her learning needs are.

9 I sense a need to clarify the purpose of our sessions for _____.

EE version of best alliance

14 The goals of these sessions are important to me.

16 I feel the things I do in supervision will help me to improve as a therapist.

17 I believe _____ is genuinely concerned for my welfare.

OR largest SD (most disagreement among supervisors)

1 I feel uncomfortable with _____.
20 I feel that _____ is not totally honest about his/her feelings toward me.
17 I am genuinely concerned for _____'s welfare.

EE largest SD (most disagreement among supervisees)

1 I feel uncomfortable with _____.
30 _____ and I collaborate on setting goals for supervision.
33 The things that _____ is asking me to do don't make sense to me.

OR smallest SD (most agreement among supervisors)

36 I respect _____ even when she/he does things I do not approve of.
19 _____ and I respect each other.
23 I appreciate _____ as a person

EE smallest SD (most agreement among supervisees)

14 The goals of these sessions are important to me.
19 _____ and I respect each other.
2 _____ and I agree about the things I will need to do to improve my abilities as a therapist.

APPENDIX M

DEMOGRAPHIC SURVEY

DEMOGRAPHIC SURVEY

Date **_____**

Personal

Gender: ____M ____F Age: _____
Ethnicity: _____
Role: _____ supervisor _____ supervisee
Estimated Verbal IQ _____

Education/Licensure

Highest degree
___PhD ___PsyD __MA/MS __MSW __BA/BS __EdD __Other_____
Year highest degree was attained _____
Licenses held (and year obtained) _____ (_____)
_____(_____)

Current year in counseling program: 1st _____ 2nd_____ 3rd_____ Not applicable____
Academic track: _____ School _____ Community Mental Health
Estimated cumulative GPA _____
Academic major in undergraduate degree _____

Experience

Years in clinical practice_____
Years of supervisory experience_____
Number of supervision sessions in this relationship _____
Satisfied legislated state requirements for supervision? ___Y ___N ___ Not applicable

APPENDIX N

$100 RAFFLE ENTRY CARD

$100 RAFFLE ENTRY CARD

Name _____

Email address to notify you if you win _____

Thank you for participating in this study. All participants who return this entry card are eligible to be entered into the raffle. I will notify you if you're the winner!

Ross L. Flynn, PhDc

APPENDIX O

RESEARCH PARTICIPANT CONSENT FORM

RESEARCH PARTICIPANT CONSENT FORM
Contribution of Supervisor and Supervisee Personal Epistemology to Supervisory Working Alliance
Ross L. Flynn
Oakland University
Counseling Department

Purpose of Study To explore how epistemic assumptions about knowledge and knowing impact the working alliance that develops between a counseling supervisor and supervisee.

Specific Procedures to be Used Practicum student and supervisor dyads will complete the Epistemological Beliefs Inventory, the Working Alliance Inventory, and a demographic survey.

Duration of Participation The inventories and survey should take about 10-15 minutes to complete.

Risks to the Individual Minimal risk (the risk to the subjects does not exceed the risks encountered in ordinary everyday life or in the performance of routine medical, dental, or psychological examinations.) No funds have been set aside for medical treatment in the case of injury related to research; however, by signing this form you are not waiving your rights to seek compensation in event of injury or negligence.

Benefits to the Individual or Others Identifying a correlation between personal epistemology and working alliance can enable supervisors and supervisees to improve their relationship.

Alternative Procedures None

Confidentiality of records and anonymity The records of this study will be kept confidential. Students' inventories will be assigned a unique number (e.g., 101A). Their supervisors will be assigned a related number (e.g., 101B). A log will be created listing supervisors & their supervisees to ensure assigned numbers match their pairs, and to ensure supervisors know which supervisees to rate on working alliance. The log will be destroyed after pairs and assigned numbers are matched and before the data are analyzed. In any sort of report we might publish, we will not include any information that will make it possible to identify a subject. The remaining research records will be stored securely and only researchers will have access to the records. The project's research records may be inspected by the Oakland University Institutional Review Board or its designees to ensure that participants' rights are being protected.

Contact Information If you have any questions about this research project, you can first contact Ross L. Flynn at 586-242-5512 or rossflynn@comcast.net. This study is supervised by Dr. James T. Hansen at 248-370-3071 or jthansen@oakland.edu. For questions regarding the rights of human subjects in research, you may contact Dr. Christine Hansen, Chair, Oakland University Institutional Review Board, 248-370-2762.

Voluntary Nature of Participation Participation is **voluntary**, refusal to participate will involve **no penalty or loss of benefits,** and the subject may **discontinue participation at any time without penalty or loss of benefits**.

I HAVE HAD THE OPPORTUNITY TO READ THIS CONSENT FORM, ASK QUESTIONS ABOUT THE RESEARCH PROJECT AND AM PREPARED TO PARTICIPATE IN THIS PROJECT.

_____ _____
Participant's Signature Date

_____
Participant's Name

_____ _____
Researcher's Signature Date

APPENDIX P

SKEWNESS AND KURTOSIS DISTRIBUTIONS

When samples have over 100 subjects, the significance level of skewness and kurtosis is not as important as their actual size and visual appearance (Tabachnick & Fidell, 2007). The following histograms illustrate the size and shape of the distributions, which suggest the data are robust to assumptions concerning normality.

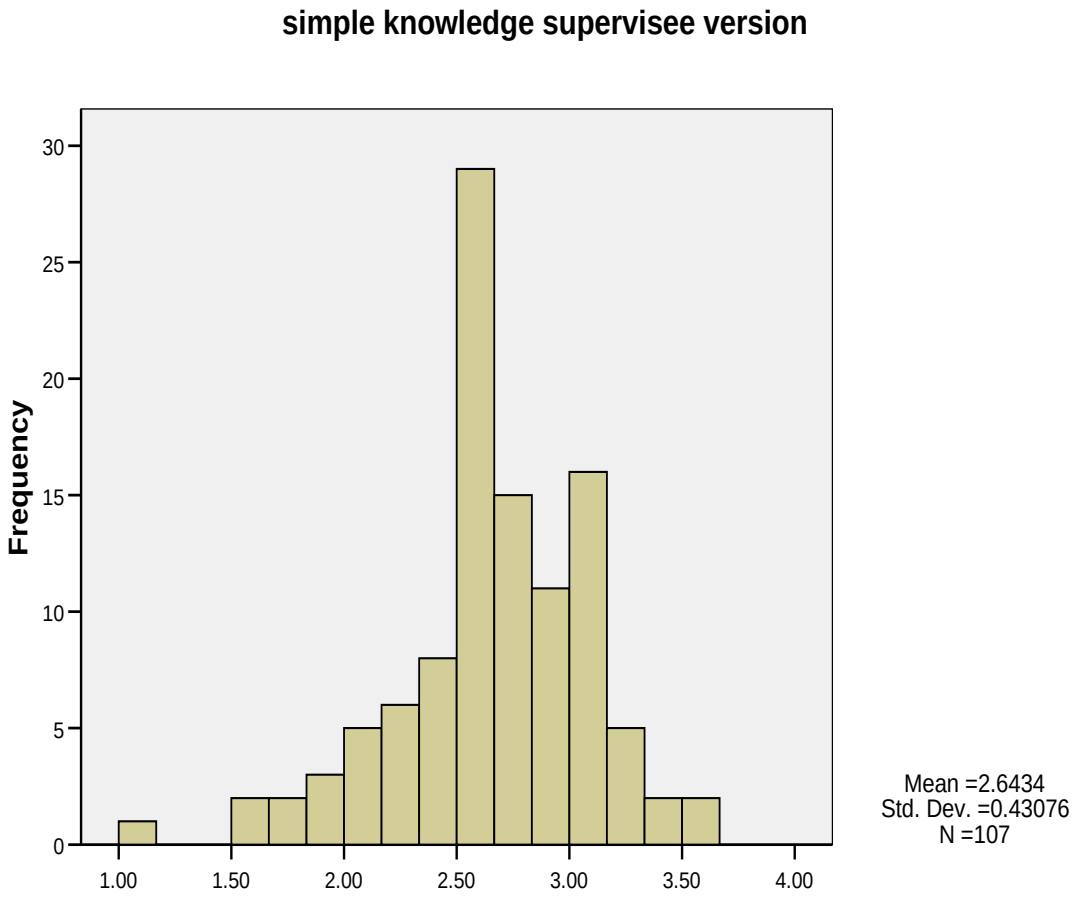

Figure 16. Supervisee Simple Knowledge Frequency Distribution

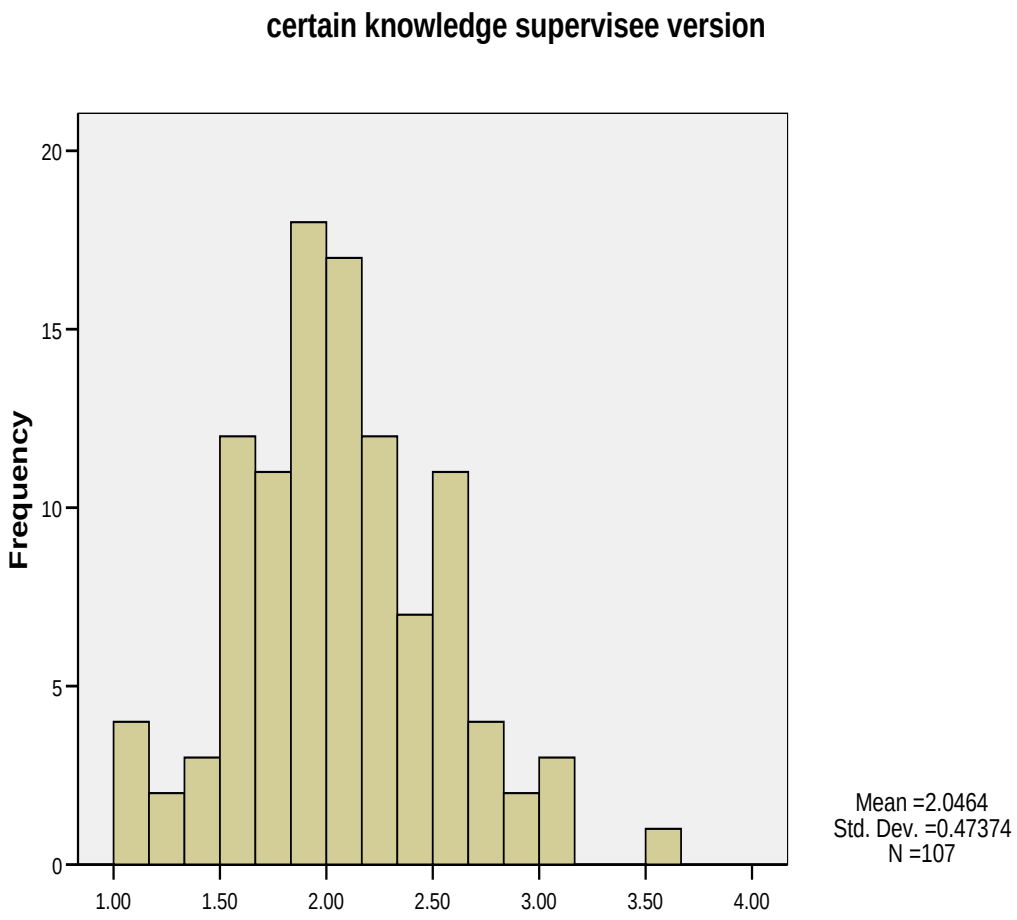

Figure 17. Supervisee Certain Knowledge Frequency Distribution

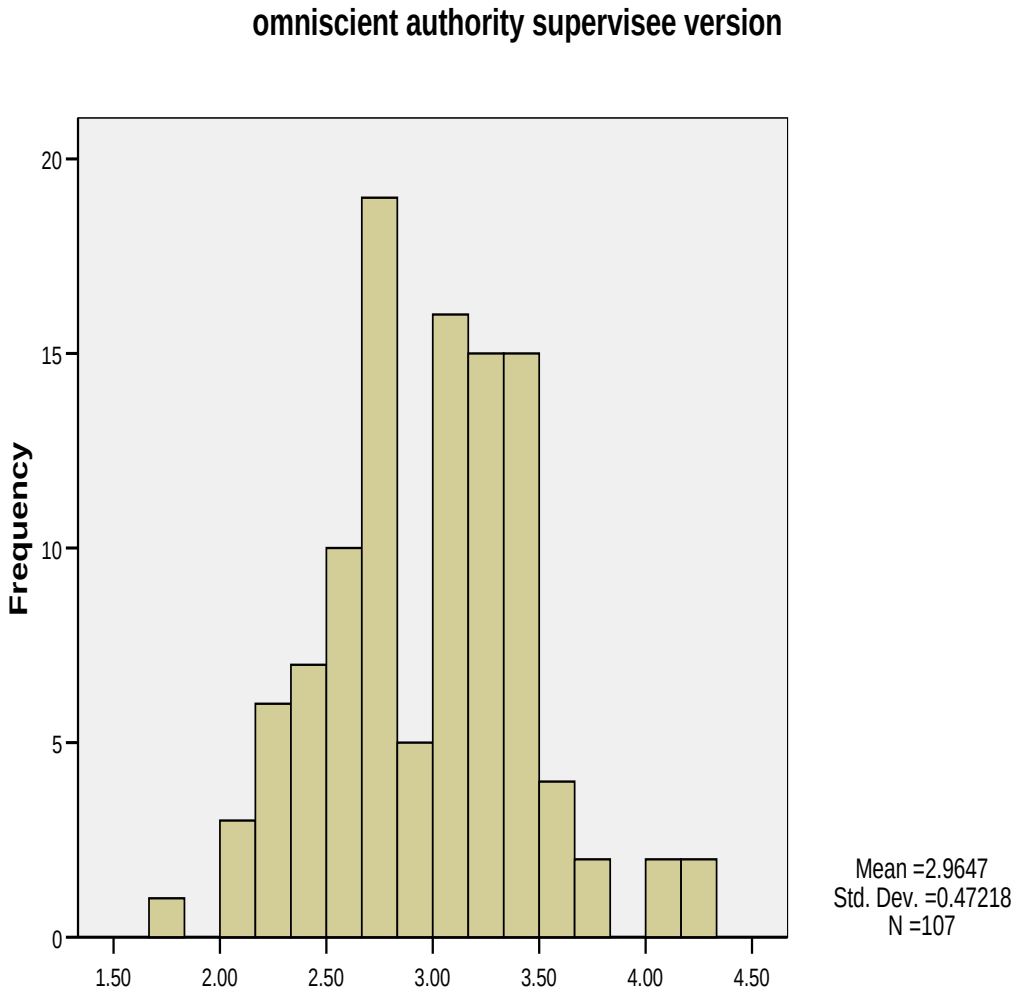

Figure 18. Supervisee Omniscient Authority Frequency Distribution

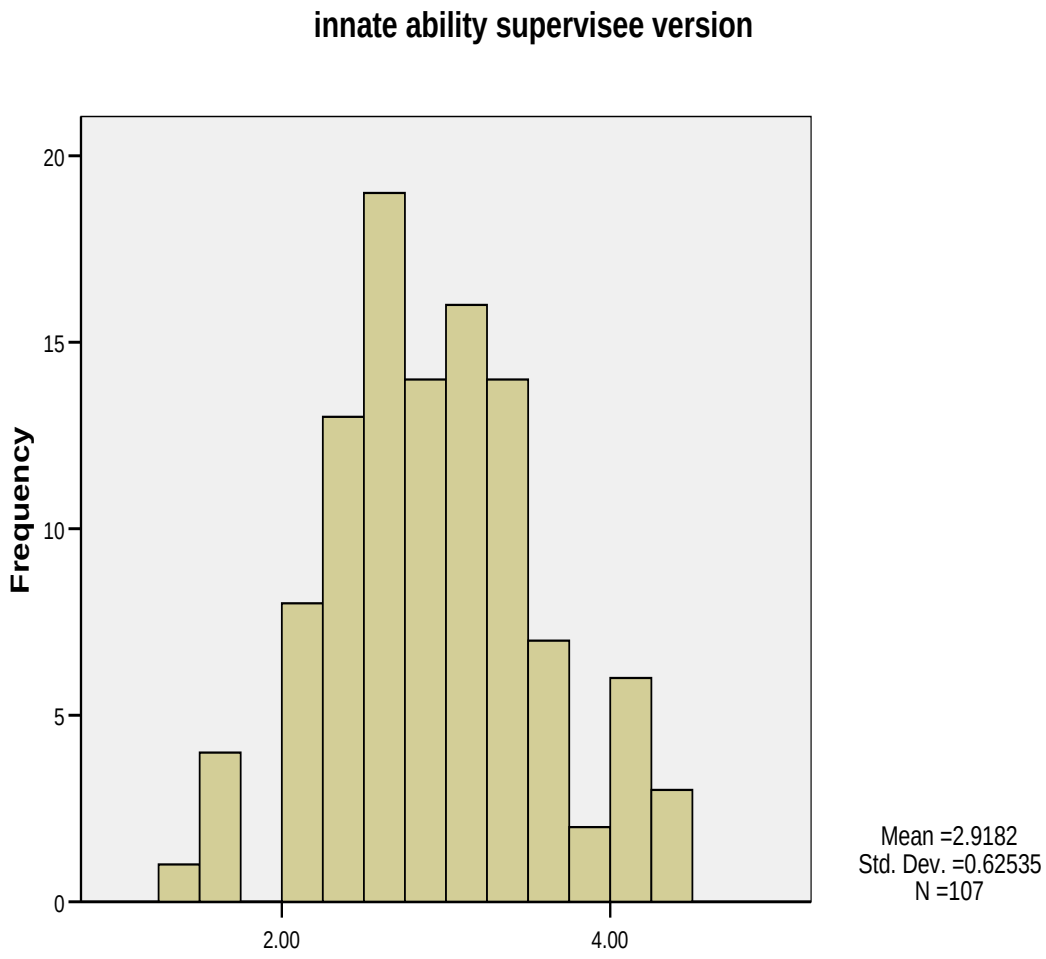

Figure 19. Supervisee Innate Ability Frequency Distribution

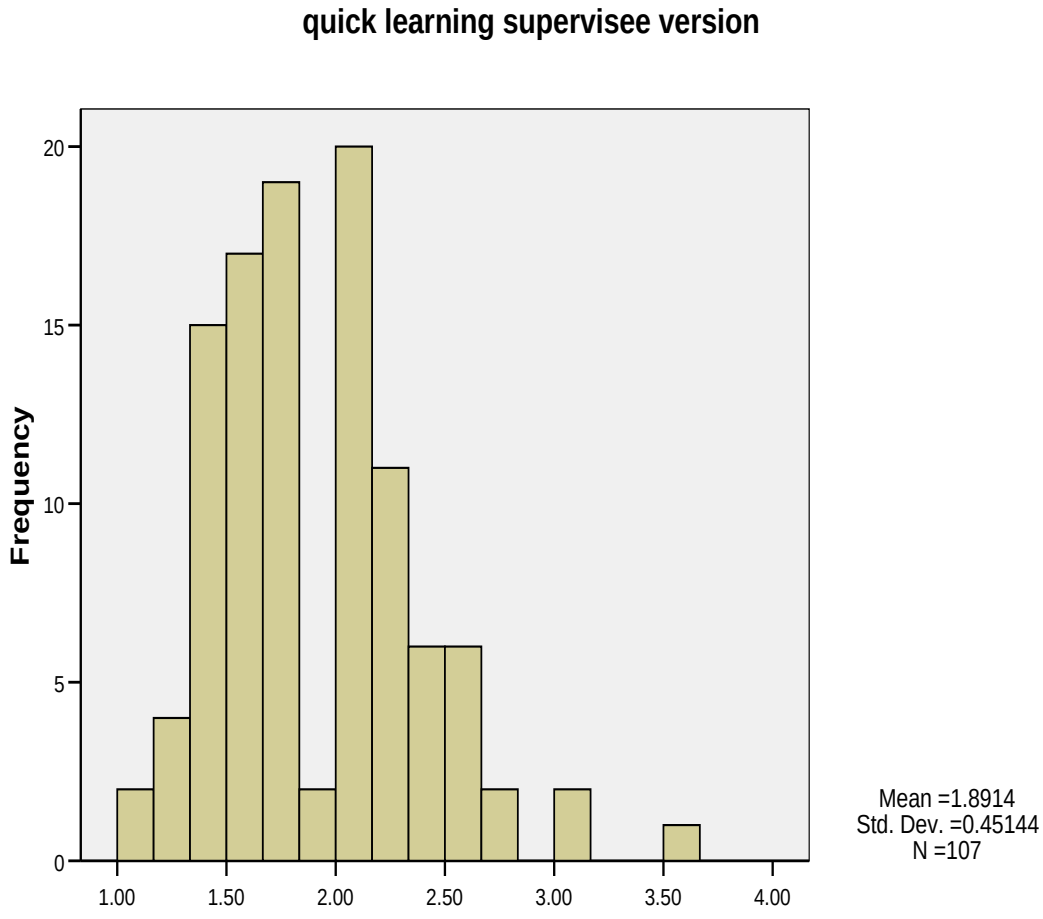

Figure 20. Supervisee Quick Learning Frequency Distribution

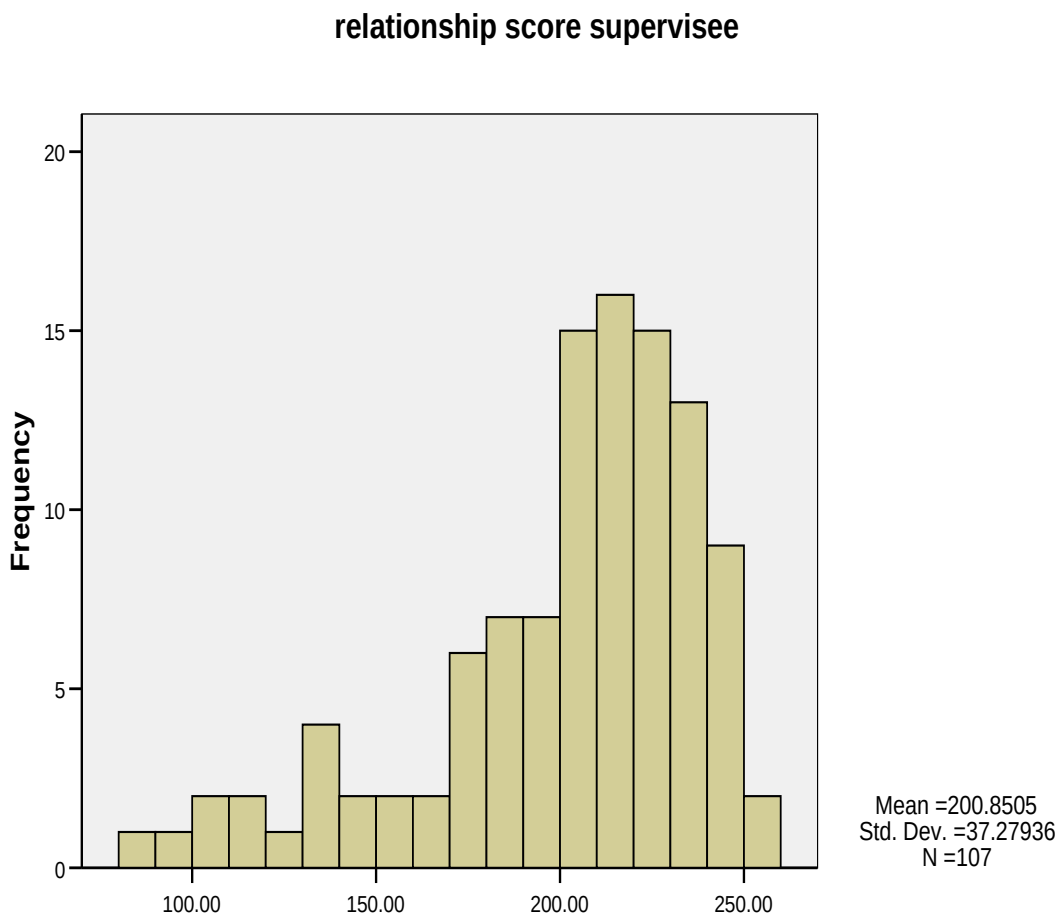

Figure 21. Supervisee Working Alliance Frequency Distribution

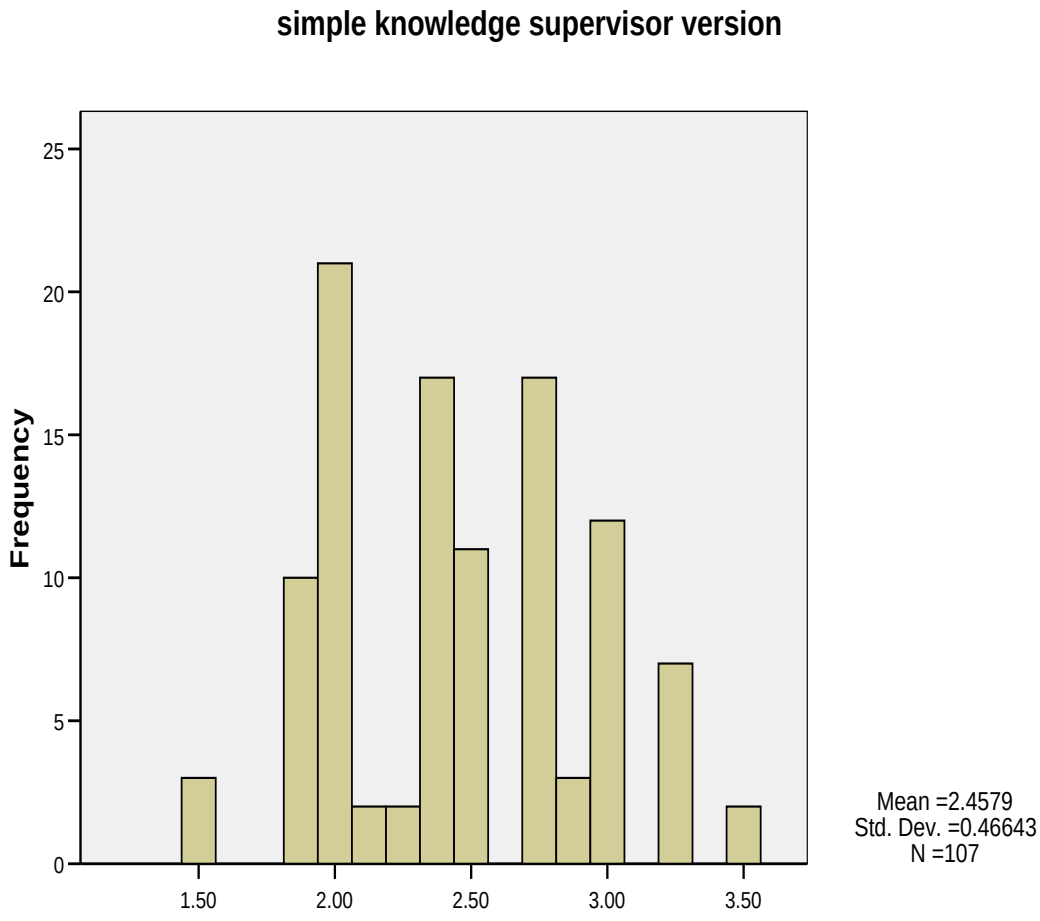

Figure 22. Supervisor Simple Knowledge Frequency Distribution

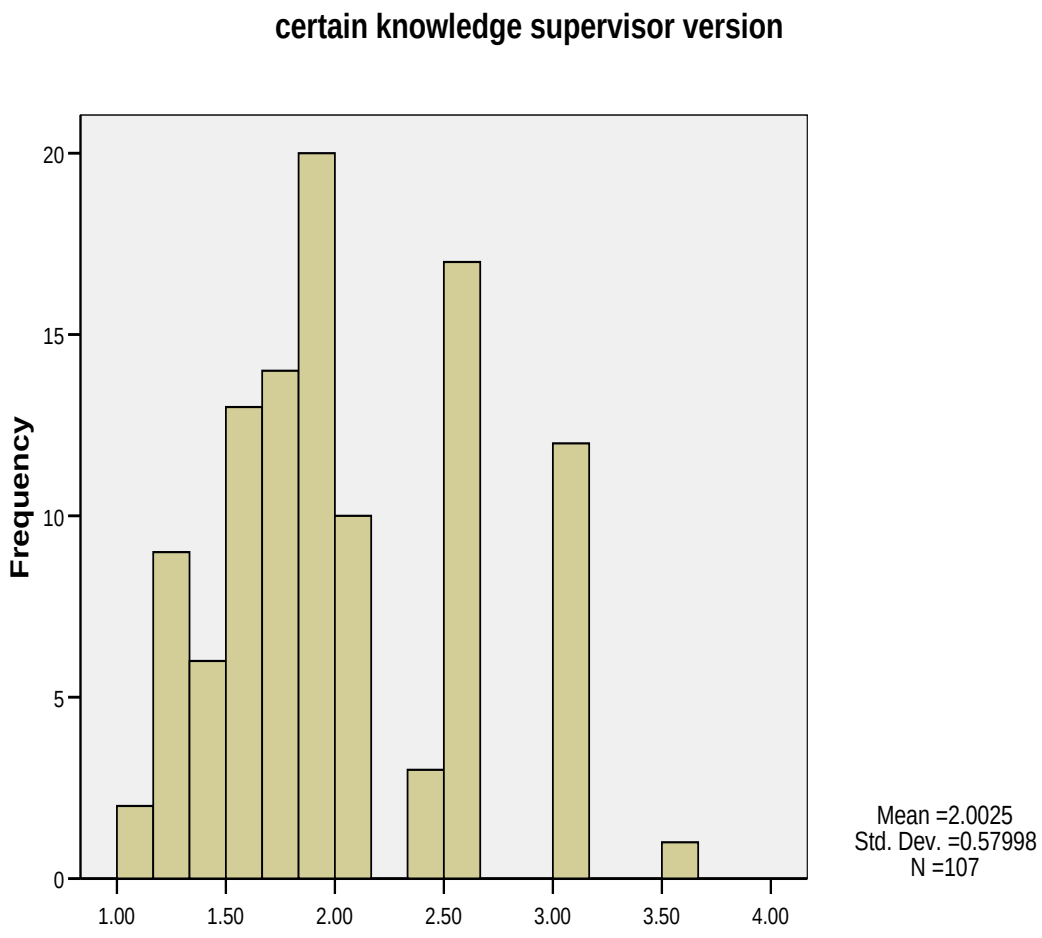

Figure 23. Supervisor Certain Knowledge Frequency Distribution

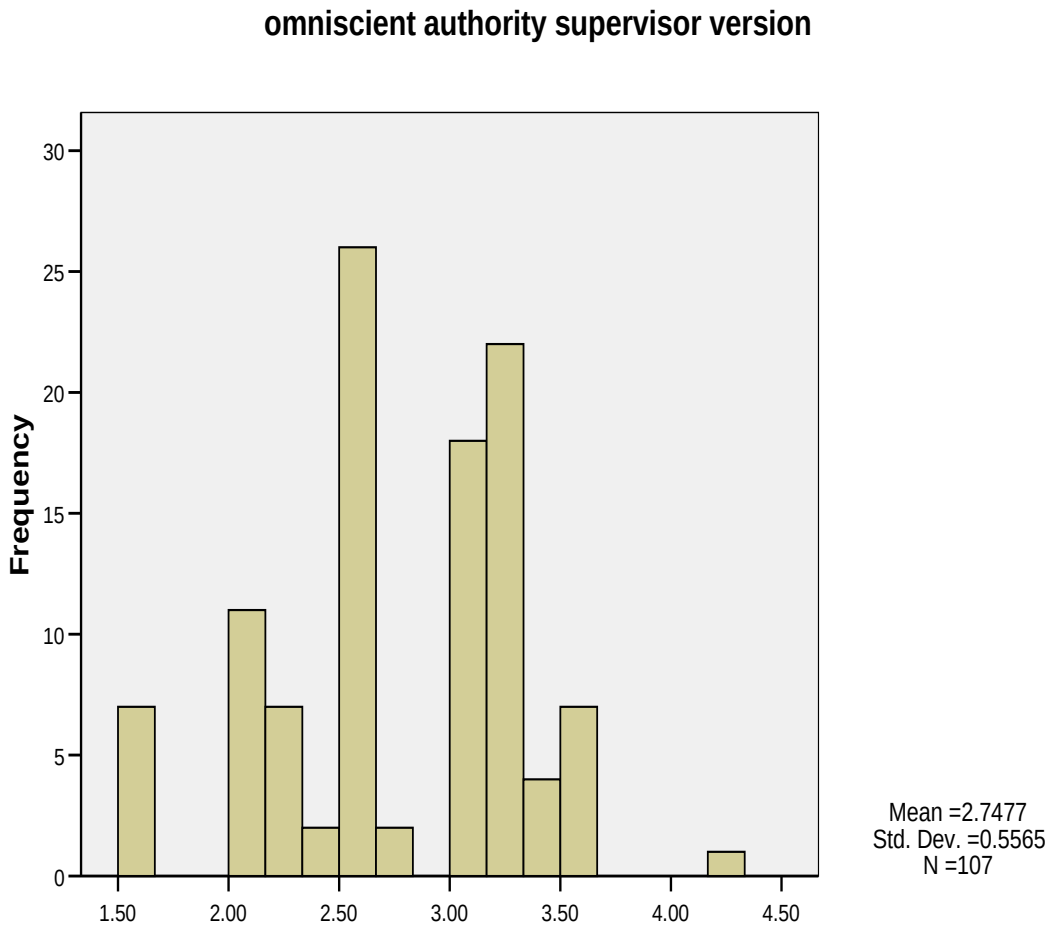

Figure 24. Supervisor Omniscient Authority Frequency Distribution

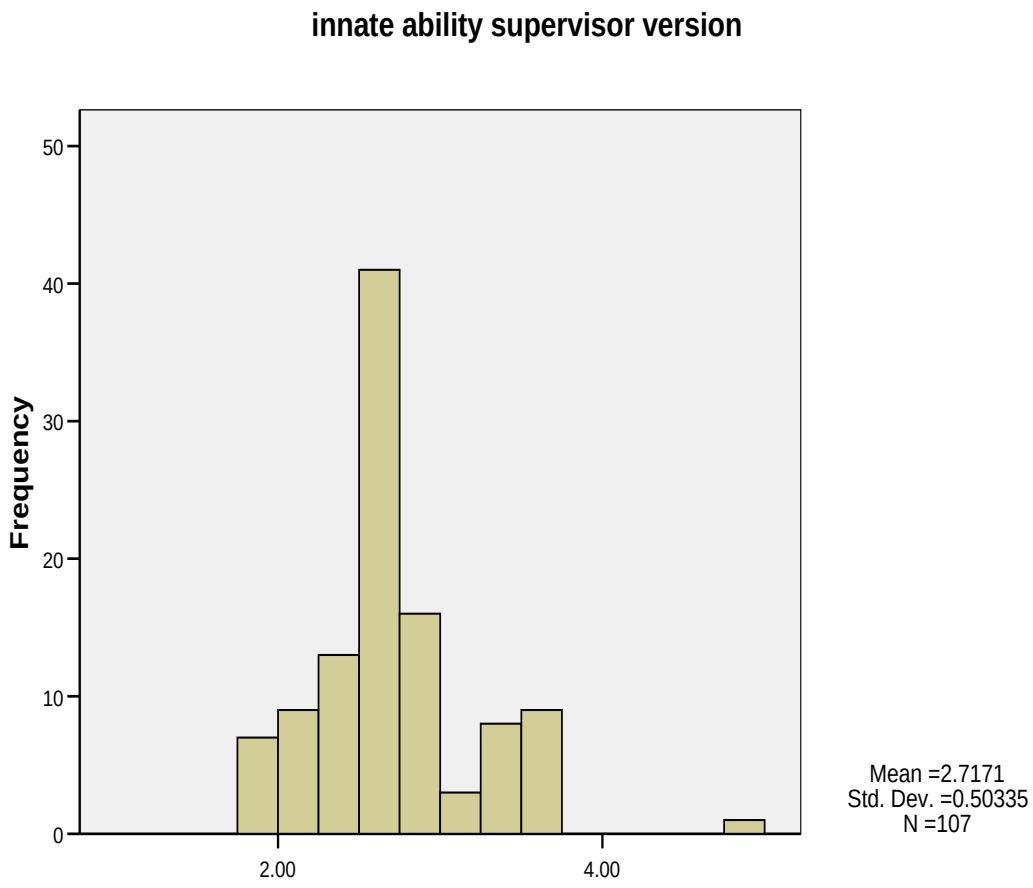

Figure 25. Supervisor Innate Ability Frequency Distribution

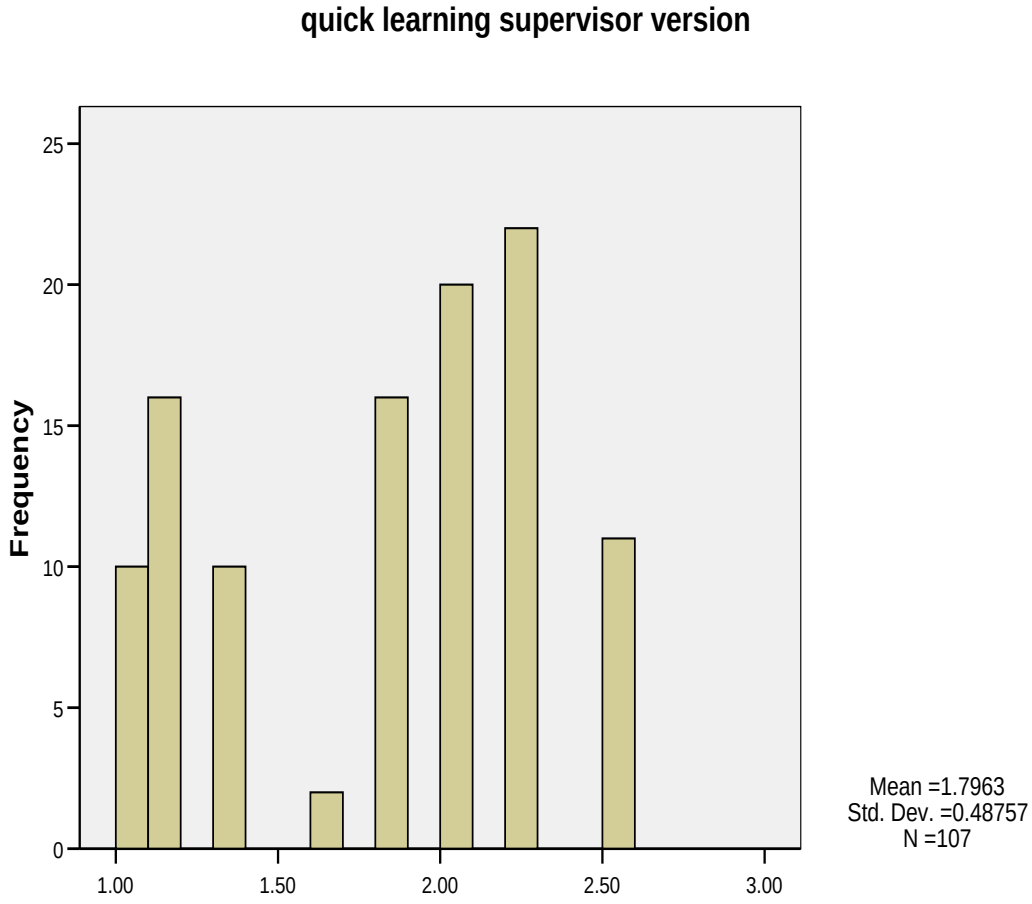

Figure 26. Supervisor Quick Learning Frequency Distribution

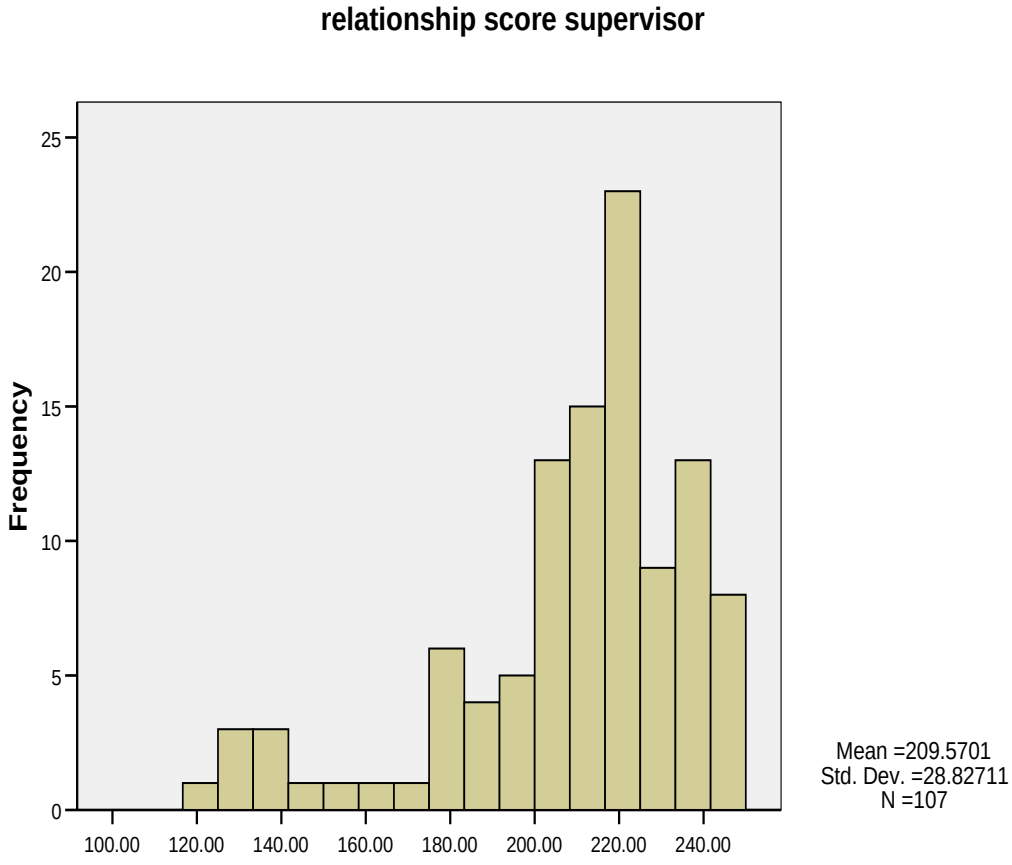

Figure 27. Supervisor Working Alliance Frequency Distribution

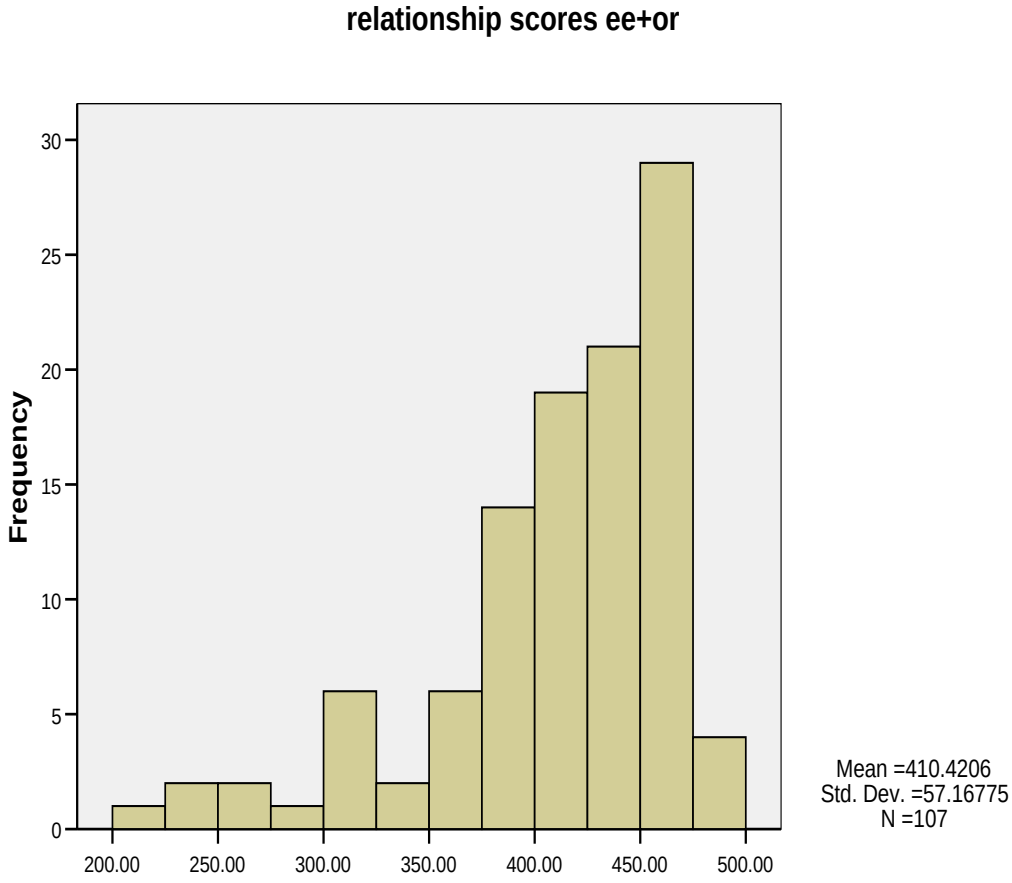

Figure 28. Supervisee & Supervisor Combined Working Alliance Frequency Distribution

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