METAPHOR PRODUCTION IN THE EXPRESSION OF EMOTIONAL LANGUAGE: AN INVESTIGATION INTO THE INFLUENCE OF WORLDVIEW, EPISTEMOLOGICAL PREFERENCE, AND EMOTIONAL EXPRESSIVITY

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by

James Michael Adams

A Dissertation
Submitted to the Graduate Studies Office
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

Approved:

December 2007
The University of Southern Mississippi

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This study was designed to explore the influence of worldview orientation, psychoepistemological commitments, and emotional expressivity on the production of metaphors. Participants were asked to describe emotionally relevant experiences through a written narrative in order to elicit metaphors. The metaphors were then categorized by a panel of therapists trained in Pepper's (1942) root metaphor theory and classification of root metaphors. The Organicism-Mechanism Paradigm Inventory (OMPI), Psychoepistemological Profile (PEP), and Berkeley Expressivity Questionnaire (BEQ) were administered to participants in order to respectively measure worldview, psychoepistemology, and emotional expressivity. A canonical correlation revealed that worldview, epistemological preference, and emotional expressivity explained about four percent of the variance of the total number and type of metaphors produced. In addition, the type and number of metaphors used explained approximately three percent of the variance in worldview, epistemological preference, and emotional expressivity. Another outcome of this study was that the subjectivity of metaphor usage and metaphoric thinking did not lend itself well to the use of a quantitative design.
ACKNOWLEDGMENTS

The writer would like to thank the dissertation director, Dr. William Lyddon, and the other committee members, Dr. Darlys Alford, Dr. Jamie Aten, Dr. James Johnson, and Dr. William Wagner, for their help, advice, and encouragement throughout this long project. I would especially like to thank Dr. William Lyddon for his enormous patience, understanding, and endurance during the long duration of this dissertation.

I would also like to thank Dr. James Reed for his generous financial and emotional support as well as the use of his resources and experience. Special thanks to Dr. Steven Graham and Giselle Washburn for their help in rating hundreds of metaphors during this study. Lastly, but not least, special thanks to Susan King for her continued support and help in troubleshooting the many twists and turns of this journey.
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CHAPTER I
INTRODUCTION AND LITERATURE REVIEW

Cognitive science, an important paradigm for both research and practice within contemporary psychological science, is the study of human cognitive and epistemological processes (Gardner, 1985). Cognitive science has become an extremely prominent field of study within applied psychology with the development of the cognitive technique by Beck (1970) and more recently with the constructivist movement (see Neimeyer, 1995a). Concurrent with the scientific shift towards the constructivist paradigm, a new cognitive model has emerged within the field of cognitive linguistics (Gentner, 1983; Gentner & Stevens, 1983; Gick & Holyoak, 1980; Lakoff, 1987; Lakoff & Johnson, 1980). The traditional name for this model was “structure mapping,” however, more recently theorists have coined the terms “analogical reasoning” (Gentner & Holyoak, 1997; Gentner & Markman, 1997; Holyoak & Thagard, 1997) or “metaphoric representation” (Murphy, 1996) to refer to the model. As Lakoff and Johnson (1980) point out:

The concepts that govern our thought are not just matters of the intellect. They also govern our everyday functioning, down to the most mundane details. Our concepts structure what we perceive, how we get around in the world, and how we relate to other people. Our conceptual system thus plays a central role in defining our everyday realities. If we are right in suggesting that our conceptual system is largely metaphorical, then the way we think, what we experience, and what we do every day is very much a matter of metaphor. (p. 3)
The basis for the previous quote and the foundation of this project is the notion that metaphor is a fundamental tool for understanding the world. This thesis is not only based upon a premise of theory, but is also derived from research and data. Throughout this paper, this research will be reviewed and discussed. An essential task of human development is to make meaning and predict the continually changing environment. This meaning-making process involves a repertoire of tools; metaphor is one such tool that facilitates both humans’ understanding and prediction of their environment (Lakoff & Johnson, 1980).

The conceptual metaphor allows for an ontological mapping from the familiar to the unknown. The unknown, or target domain, can be understood through the mapping of the familiar, or source, domain (Lakoff, 1993). To better explain this, perhaps an example is warranted. Consider the metaphor TIME IS MONEY. The source domain or familiar concept is “money” while the unknown or target domain is “time.” In this example, time is understood through the ontological mapping of money onto time. Time is understood in terms of a very different concept, money. However, certain specific ontological correspondences between the two domains (time and money) allow this mapping. There exist similarities between the two concepts that permit the concept of money to metaphorically represent time (Lakoff, 1993). In other words, the very understanding and experience of time is determined, at least in part, by the metaphor system of money. Leary (1990) eloquently explains:

All knowledge is ultimately rooted in metaphorical (or analogical) modes of
perception and thought. When any aspect of our experience strikes us as worth understanding, either for the first time or in a new way, we begin to search for similar instances....It is my contention that the similar instances that serve as pegs and pigeonholes -- as our categories of understanding -- are either explicitly or implicitly metaphorical in nature and function. (p. 3)

The terms used to describe this feature of human cognition are varied. For example, metaphorical modes of thought have been referred to as mental analogies (Gentner & Holyoak, 1997), conceptual archetypes (Black, 1962), conceptual metaphors (Lakoff & Johnson, 1980), main metaphors (Koch & Deetz, 1981), implicit metaphors (Baxter, 1992), mental models (Collins & Gentner, 1987), analogical maps (Collins & Gentner, 1987), root metaphors (Pepper, 1942), and folk theories (Kempton, 1987). However, all of these various names refer to the same cognitive process: humans learn, categorize, and understand novel aspects of their world by applying what they know to what they do not know. In other words, metaphorical knowing is a type of generalization of the familiar to the not familiar such as when the body (unfamiliar) is viewed as a machine (familiar) or the mind is viewed as a computer. These metaphors are not only linguistic in nature, but structural: the known concept’s cognitive structure is “mapped onto” the unknown conceptual framework.

Kempton (1987) explains that folk theories (another term for conceptual metaphors) allow humans to design and implement predictions, which guide behavior. Collins and Gentner (1987) similarly state that mental models (or conceptual metaphors)
can be utilized to estimate the nature of reality. Essentially, metaphor is a fundamental building block for making meaning out of the world of stimuli and experience.

There is a substantial body of empirical research suggesting that these systematic metaphors are grounded, in part, in the nature of our bodily experience (Damasio, 1994; Lakoff & Johnson, 1980). Johnson (1987) has referred to this concept as embodied knowledge. Therefore, people will use these concrete, bodily based image schemata or metaphors to structure abstract concepts. “The result is a conceptual mapping of structure from a source domain (e.g., some bodily experience) onto a more abstract or less well-articulated, target domain (e.g., love, change, ideas, relationships)” (Daniels & White, 1997, p. 176). For instance, using the metaphor LOVE IS HUNGER we can understand love as a human necessity causing significant pain if not satiated.

Given that metaphor and conceptual linguistics is a valuable tool for meaning-making and the construction of experience, we can start to break that process into its influential factors. In studying this process, three potential factors are examined more closely: semantic/linguistic influence, psycho-epistemological preference, and emotional expressivity. A brief overview of these factors follows.

Human Complexity and the Symbolic System of Metaphor

This short introduction will by no means be able to reflect the intricacies of the science of complexity and the extensions that have been made into all areas of psychology as well as other fields such as mathematics, biology, neuroscience, astronomy, physics, etc. However, some mention of what the term “complexity” is
referring to would be important in shaping understanding of how it applies to metaphor and other cognitive representing structures. Mahoney and Moes (1997) outlined several characteristics of a complexity theory that will illustrate the concepts.

First, complexity theories are based on the notion that a system (or a person in this study’s case) is capable of self-movement. This implies that a person is not merely a passive recipient of his or her environment’s shaping forces. Instead, he is a co-creator of his mind and the structures that regulate how he responds to his reality. Second, the person works to structure, maintain, and order his or her internal mindset in a fashion that is ultimately self-organizing, predictable, and unique to that individual. Through this self-organizing maintenance towards structure, the person creates a unique identity that is dynamic and changing throughout life rather than at specific critical moments. This self-organizing activity is achieved through two mediums: symbolization such as metaphor and language and social/interpersonal relationships. These relationships are central to the development of personal identities and language is a critical medium to negotiate these relationships. An important crossover between complexity theories and metaphor is the work of Stephen Pepper (1942). Pepper investigated world hypotheses through a method that he termed the root metaphor method.

According to Pepper (1942) a root metaphor is a shared personal philosophy that exists on a tacit or unconscious level yet wields great power over the individual and society through the structuring of beliefs, theories, and hypotheses. It provides a foundation upon which all of other beliefs about the world and reality are based.
According to Pepper, there are four distinctly different world hypotheses or fundamental views of reality: formism, mechanism, contextualism, and organicism, each based on a different root metaphor. The formistic world hypothesis is based on similarity; two or more objects are considered to be related if they share characteristics. Therefore, the formistic philosophy would pay special attention to traits, types, taxonomies, and characteristics. The mechanistic hypothesis is based upon the *machine* metaphor and focuses on the causal relationship of objects. The hypothesis is analytic in its attempt to explain cause and effect relationships. The contextualist hypothesis is based on the metaphor of an *historical event* and focuses on the temporal features of objects in context. An individual preferring the contextualist hypothesis would understand an object or event as being embedded within a context that unfolds over time. The organismic hypothesis is based on an *organic process* metaphor and focuses on the integrated and holistic relationship of objects. Organismic thinkers tend to view phenomena as developing structures that evolve over time into integrated wholes.

**Metaphor and Individual Differences**

In recent years, the study of individual differences in cognitive processes and epistemological has become an empirical focus (Lakoff & Johnson, 1980; Daniels & White, 1997). Individual differences in fundamental approaches to human knowing have been referred to as *epistemic styles* (Lyddon, 1991). According to Royce and Mos (1980), an epistemic style is “conceptualized as a major personality integrator or higher-order personality factor which determines an individual’s particular ‘world-view’” (p. 1).
These "styles" seek to integrate both cognition and affect in an effort to "recruit" abilities, beliefs, and feelings that are involved in a specific situation (Royce & Powell, 1983). In essence, these styles are believed to function as higher-ordering personality variables.

Royce and Powell (1983) suggested that individuals differ in the style that they tend to use, yet these tendencies may be reduced to three epistemic styles: empirical, rational, and metaphorical. The empirical style involves a view of the world through the senses in which reality testing is based upon the reliability and validity of one's observations. The rational style involves a view of the world that is based on rational or analytic skills and is tested in terms of logical consistency. The metaphorical style is based on symbolic-metaphoric skills in which experience is tested in terms of its generalization. In other words, the metaphoric style prefers cognitive representations of experience to have the greatest degree of generality. These three styles can be operationalized through a measure called the Psycho-Epistemological Profile (Royce & Mos, 1980). This instrument as well as these concepts will be reviewed in more detail later in the proposal.

From a personal epistemological perspective, metaphors are thus organizing frameworks for an individual's personal reality and identity. Much like worldviews, metaphors are inherent, deep, tacit knowledge structures that guide experience and action (Kopp & Craw, 1998; Schreiner & Lyddon, 1998). Carlsen (1995), for example, notes: More than poetic figures of speech, metaphors shake and shape our systems of meaning. For these reasons, we do well to contemplate our conceptual systems in
assembling their elements for thoughtful scrutiny; metaphors have a way of dropping below the surface of awareness to influence us in ways that we may not fully acknowledge or understand. (p. 131)

Metaphor and Emotion

Another aspect of human experience assumed to be fundamental to meaning-making is emotion. Martin Heidegger argued that emotion is suffused into consciousness, the world, and life (Calhoun, 1984). Lubart and Getz (1997) suggest that endocepts or emotional concepts are highly individualistic connections that differ according to the person’s experience with the world. Emotion is not only an inseparable aspect of experience but may constitute experience itself (Lupton, 1998). Therefore, if metaphor is a fundamental tool for constructing meaning and emotion is fundamental to experience, then the two constructs may be expected to overlap significantly as basic building blocks of experience (Cornelius, 1996). It seems that to investigate metaphor at its basic level, one needs to consider its relationship to the foundation of experience -- emotion. In addition, researchers have noted a relationship between the use of metaphor and the prevalence of emotion (Davitz, 1969; Fainsilber & Ortony, 1987; Ortony, 1975; Ortony, Clore, & Collins, 1988; Williams-Whitney, Mio, & Whitney, 1992). Thomas Wolfe, for example, was among the first to notice this complex relationship between metaphor and emotion. He noticed that he was most metaphorically creative during times in which his emotions were most salient and present with him. Beginning with this insightful observation, the relationship between metaphor and emotion was studied in an
effort to understand the genesis of creativity. Emotion has been viewed by some as a catalyst for the generation of creative process in which metaphor is a strong part. For example, pleasure can be associated with the challenge and curiosity of problem solving (Russ, 1993). Ortony (1975) noted that individuals tend to need metaphoric language to express the subjectivity of emotions. Modern cognitive theorists suggest that emotions are inherently linked to concepts, constructs, and images representing objects, people, and events in the memory (Lubart & Getz, 1997). Therefore, as an emotion is activated, so is the connected concept or image. This emotion-concept structure has been referred to as an endocept (Averill & Nunley, 1992). Because two seemingly disparate objects, persons, or events can be associated if their emotional endocepts are similar in structure (Lubart & Getz, 1997), emotion may play an important role in the use of conceptual metaphors.

The current project will be designed to examine how conceptual metaphor may be linked to specific individual differences in the expression of emotion. Many researchers have noted that individuals differ in their ability to access their own emotions. For example, researchers in clinical treatment have noted the presence of alexithymia, a clinical inability to express emotions (Taylor, 1984). Other researchers have observed individual differences in openness to feelings (Allen & Hamsher, 1974; Komiya, Good, & Sherrod, 2000; Mayer & Salovey, 1993), emotional creativity (Averill, 1999) as well as cultural differences in emotional expression (Paniagua, 1998; Sodowsky, Kwan, & Pannu, 1995). Because individual differences in emotional expression may play a
significant role in the cognitive organization of emotion and its subsequent expression through metaphor, individual differences in emotional expressivity will also be a focus of this study.

The construct of emotional expressivity involve “the behavioral changes associated with the experience of emotion” (Gross & John, 1995, p. 555). Examples of such observable behaviors are smiling, laughing, crying, changes in posture, vocal changes, and eye movement. Kennedy-Moore and Watson (1999, p. 4) defines emotional expression as “observable verbal and nonverbal behaviors that communicate and/or symbolize emotional experience.” This definition emphasizes the symbolizing nature of emotional expression suggesting a theoretical similarity to metaphor, as a representation of experience. This definition also focuses on the individual differences in the expression of emotion. It is not to be confused with emotional experience, a basic human phenomenon common among all humans. This expression can be with varying degrees of self-awareness (Kennedy-Moore & Watson, 1999). For example, someone with a frown on their face may not necessarily know that they are experiencing anger or distress. Also, a behavioral expression may not have a one-to-one correspondence between the behavior and the emotion. For instance, someone may express a smile on their face but actually be experiencing sadness.

Definition of Terms

**Analogical Reasoning:** This term is primarily used in the cognitive science and educational literature and is essentially another term for metaphorical knowing in which
the term “analogy” is substituted for the term “metaphor.”

**Ceremony**: A set of actions, often called a ritual, which has symbolic importance for the people performing it (Combs & Freedman, 1990).

**Conceptual Metaphor**: A type of metaphor present in cognitive operations that organizes a particular domain. For example, *love is a journey* organizes love with the basic concepts of a journey (Lakoff & Johnson, 1980).

**Cognitive Linguistics**: The study of the interaction between cognitive processes and language.

**Endocept**: A concept used to represent the fusion of emotion and cognition.

**Epistemology**: The study of human knowing processes and the sources, nature, and validation of knowledge.

**Metaphor**: A figure of speech in which a term is transferred from the object it ordinarily designates to an object it may designate only by implicit comparison or analogy (Houghton Mifflin Company, 1991)

**Metaphorical Knowing**: The process by which humans understand and “know” by applying what they know to what they do not know. Metaphorical Knowing involves a generalization of the known to the unknown.

**Paradigm**: A model of collective thinking (or worldview) that may influence particular human interactions and beliefs (Kuhn, 1970).

**Personal Epistemology**: An individual style of knowing, explaining, and relating to the world based an integration of emotional, physiological, behavioral, and cognitive
components that constitutes an aspect of one’s personality. This is also called epistemic style or epistemological preference (Royce & Powell, 1983)

**Psycho-Epistemological Preference:** The dominant epistemic style as measured by the Psycho-Epistemological Profile (Royce & Mos, 1980).

**Root Metaphors:** A shared personal philosophy or worldview that exists on a tacit level and influences persons’ beliefs, theories, hypotheses, etc. (Pepper, 1942).

**Simile:** A figure of speech in which two essentially unlike things are compared, often in a phrase introduced by “like” or “as” (Houghton Mifflin Company, 1991).

**Semantics:** A term referring to the structure of language.

**Source Domain:** The object, concept, idea, etc. upon which a metaphorical comparison is based. It is also called the vehicle or secondary domain. For example, in the metaphor *love is a journey*, journey is the source domain.

**Symbol:** The smallest units of metaphor – words, objects, mental images, and the like – in which a richness of meaning is crystallized (Combs & Freedman, 1990).

**Target Domain:** The focus of the metaphor or concept that is being explained. It is also called the topic or primary domain. For example, in the metaphor *love is a journey*, love is the target domain.

What is Metaphor?

But the greatest thing, by far, is to be a master of metaphor. It is the one thing that cannot be learned from others; and it is also a sign of genius since a good metaphor implies an intuitive perception of similarity of dissimilars. Through
resemblance, metaphor makes things clearer. (excerpt from Aristotle, Poetics; cited in Davis, Harrison, Johnson, Smith, & Crawford, 1995)

The term metaphor derives from the Greek terms meta, pertaining to sharing, common action, or pursuit, and pherein, meaning to carry or transfer. *The American Heritage Dictionary* (Houghton Mifflin Company, 1991, p. 790) defines metaphor as “A figure of speech in which a term is transferred from the object it ordinarily designates to an object it may designate only by implicit comparison or analogy, as in the phrase *evening of life*.” Turbayne (1970) expands this definition by adding that the metaphor does not need to be expressed in words. Instead, the metaphor can be nonverbal in a symbol form as is the case of Michelangelo using the figure of Leda with the swan to illustrate both being lost into physical passion but also the agony of dying (Barker, 1985).


Metaphor consists in giving one thing to a name or description that belongs by convention to something else, on the grounds of some similarity between the two. In considering this definition, one should realize that the thing metaphorized need not be a material object. Qualities, events, and any other aspect of experience are included among the innumerable ‘things’ that can be rendered through metaphor. (p. 5)

Underscoring the constitutive power of metaphor, Santostefano (1984, p. 79) states:

Metaphor is a pattern of images, symbols, words, emotions, and actions which
synthesizes, conserves, and represents experiences. But when imposed on information a metaphor not only determines how the information is construed, but also prescribes particular actions and emotions.

Combs and Freedman (1990) prefer a concise but quite encompassing definition remarking that “A metaphor is something that stands for something else” (p. xiv). They also use the term symbol “to refer to the smallest units of metaphor – words, objects, mental images, and the like – in which a richness of meaning is crystallized” (p. xiv). Combs and Freedman also suggest that a story is metaphorical whenever it is designed to communicate more than the events of the story itself. These metaphorical stories have collectively been referred to as narratives and can refer to an individual’s preference for organizing his/her own life experiences in story or narrative form (Neimeyer, 1995a).

It needs also to be explained that throughout the metaphor and psycholinguistic literature, the term source (also called the vehicle or secondary domain) is used when referring to the object, concept, idea, etc. upon which the association is based. In regards to the metaphor LOVE IS A JOURNEY, love would be the source. The target (also called the topic or primary domain) is the focus of the metaphor or the concept that is being explained. In the above example, journey would be the target. In addition, metaphoric comparisons do not retain the same meaning when reversed (Glucksberg & Keysar, 1990). For example, the metaphor LOVE IS LIKE WAR is not a symmetrical relationship because it is not also assumed that then WAR IS LIKE LOVE.

Considerable differences of definition exist within the literature, some preferring
short, contrite, and somewhat exclusive explanations and still others preferring expansive, long, and inclusive definitions. There appears to be agreement that metaphor is a psycholinguistic phenomenon that has greater linguistic implications than the individual used in the metaphor. However, metaphors have also been suggested to extend beyond language into the nonverbal realm and the visual arts such as paintings, sculptures, television, film, and dance (Leary, 1990). The popular Star Wars film series is an example of how metaphor is utilized to captivate an audience by creating characters that metaphorically represent human ideals (Liebert & Spiegler, 1994). In a film, a wise old man figure may be representative of wisdom and fatherhood, the hero representative of bravery and innocence, the heroine symbolic of comfort and nurturing, the shadow or villain symbolic of evil, and the sidekick representative of loyalty and friendship. Jung (1964) believed such symbolic figures to be the unconscious representations of the self and all its various dimensions. These symbols, called archetypes, were thought by Jung to be shared by all humans in the collective unconscious, a universal depository for the human race's experiences, beliefs, thoughts, and drives that is passed along genetically from one generation to the next. Jung based this theory on the seeming universality of symbols throughout various cultures in the world. For example, the mandala, a symbolic visual metaphor for wholeness can be found in one form or another throughout many seemingly unconnected cultures in the world (McAdams, 1994; Sharf, 1996). Another example would be that the lotus position, a metaphor for harmony in the world and environment, can be found in pictures and sculptures throughout Asian cultures as well as
Central American cultures such as the Mayans (Fash, 1991). Regardless of the conclusions that Jung made, it is evident that movies often make use of the universal nature of metaphor in order to captivate the widest range of audience as possible (Villela, 1999).

Other examples of metaphor or symbol in art can be found in the myriad of religious Renaissance paintings depicting angelic and Godly characters, such as Archangel Michael, Mary, or Jesus, with a circular ball of light located behind their heads (Jaffe, 1964). This globe of light is meant to represent deity, holiness, and power. Many cultures throughout the world have used totems or masks to represent various ideas, concepts, and symbols as well as family distinctions and an individual’s identity within the tribe (Henderson, 1964). Beijing Opera, a popular form of theater practiced in China, makes constant use of visual as well as musical metaphor. Examples include the sound of the gong which marks entries and exits as well as emotional climax, hand gestures which symbolize emotional reaction, pheasant plumes which represent warriors from “barbarian” regions of China, beards which symbolize maturity and seniority, etc. (Scott, 1983).

Metaphor is mostly found in the verbal domain including music, stories, narratives, poems, satire and humor, fairy tales, and other forms of literature. Comics and comedians commonly take advantage of metaphor to deliver jokes. Comedians such as Dennis Miller and Jerry Seinfeld frequently use objects of great familiarity to deliver humor; the familiar items, such as every day occurrences or celebrities, act as metaphors.
of more humorous issues (Dunne, 2000). For example, wondering why a hot dog is
called a hot dog is potentially humorous because it reminds us of the common
contradictions that surround our everyday life and language. When George Orwell (1945)
presented his novel *Animal Farm* to the public, it was not intended to be a humorous
story outlining the lives of farm animals. The purpose of the novel was to make a
commentary on the communistic political system cleverly utilizing the metaphor of farm
animals. The Bible is filled with metaphors, analogical reasoning, and comparison. The
word *proverb* in Hebrew even means *to be like*; henceforth, the entire book of Proverbs is
merely a compilation of comparisons between concrete images and points of wisdom.

However, metaphor can also be expressed in a culture through social norms,
collective myths, rituals, symbols, philosophies, and sub-cultural or scientific paradigms.
Many of the social norms, beliefs, and myths of the classical Greek era in Europe were
embodied in Homer’s two classics *The Odyssey* and *The Iliad*. In *The Odyssey*,
Odysseus, the main hero, encounters Circe who has the ability to cast magical spells.
Wielding her magic, Circe changes many of the men on the island into pigs – a symbol of
the cultural belief that men had a lustful, bestial side (Davis et al., 1995). Other
metaphors for human nature exist throughout the two books. Another good example is
that of Achilleaus (or Achilles), who was a warrior that could not be injured except for a
spot on his heel – this heel ultimately led to his death. This character is metaphoric of the
idea that all strength has a weak point (Davis et al., 1995). Another Greek myth follows
the story of a master inventor and scientist named Daedalus and his son Icarus. Daedalus
had helped a warrior named Theseus escape death. Enraged, the king of Crete imprisoned Daedalus and his son. In order to escape, Daedalus fashioned wings using seagull feathers and wax to their arms and attempted to fly back to Greece. However, during the trip, Icarus gained too much confidence and flew high in the air, which melted the wax and sent Icarus plummeting to the Earth. The story itself is a metaphor for the value of humility and the danger of over-confidence (Barker, 1985).

Cultural ceremonies may depict metaphoric expressions as well. Combs and Freedman (1990), for example, define a ceremony as “a set of actions, often called a ritual that has symbolic importance for the people performing it” (p. xiv). Ceremonies provide an important function within a society providing a sense of connectedness for members in the community. These shared rituals, which can be as simple as waving a hand to say hello or goodbye, bond the individuals together to create cohesive group behavior. These rituals many times highlight social values and mores such as the ritual of bowing to show respect or they may symbolize changes in relationships. For example, weddings, baptisms, bar mitzvahs, funerals, award presentations, birthdays, etc. are all changes in relationships and are subsequently inundated with ritual and metaphor. The use of coffins is an example of shared cultural metaphors; they begin as a way to protect the body of the deceased from animals and such but instead took on elaborate symbolism (David, 1998). For example, ancient Egyptian culture would paint elaborate geometric designs and build dome shaped lids in order to represent the coffin as the HOUSE OF THE DEAD.

Thomas Kuhn (1970) studied sub-cultural metaphors within the realm of science
called “paradigms.” Kuhn (1970, p. 10) describes his use of the word “paradigm” as “some accepted examples of actual scientific practice -- examples which include law, theory, application, and instrumentation together -- provide models from which spring particular coherent traditions of scientific research.” Essentially, a paradigm is a way of collectively thinking, interacting, and behaving. Within the scientific sub-culture, it provides the same function as a social norm or cultural practice. Kuhn noticed that these paradigmatic views of truth would undergo revolutions or drastic changes many times prompted by technological or scientific discovery. He also noticed that these paradigmatic revolutions or shifts would not only change the scientific practices and behaviors, but also the worldview and mode of collectively thinking. Therefore, Kuhn made the conclusion that supposed “normal science” heavily relied on the current prescribed paradigm thereby making scientific conclusions laden with value and cultural belief. This is not only within the conclusions that a scientist may drawn upon evidence but also with the questions that they ask.

A conceptually similar definition of simile is “A figure of speech in which two essentially unlike things are compared, often in a phrase introduced by like or as as in: He was as strong as a bull” (Houghton Mifflin Company, p. 1141). Analogy is defined as “Correspondence in some respects between things otherwise dissimilar. A form of logical inference, or an instance of it, based on the assumption that if two things are known to be alike in some respects, then they must be alike in other respects” (Houghton Mifflin Company, p. 106). For the purposes of this project, the concepts of metaphor,
simile, and analogy will be used interchangeably. It is recognized that these terms differ according to their linguistic qualities, but psychologically, they represent the same process of likening two seemingly unrelated objects with each other for the purposes of expanding knowledge. In addition, all three terms are consistent with the broader Aristotelian definition that metaphor is giving something a name that belongs to something else.

Types of Metaphors

Lakoff and Johnson (1980) outline four basic types of metaphors. The first, the structural metaphor, is the most common metaphor in language and typically the most studied. In structural metaphors, one idea is structured in terms of another. This type of metaphor is the most common and is a simple one to one correspondence between the source and the target. For instance, LIFE IS A JOURNEY is an example of a structural metaphor. Life is understood by the concept of a journey; the metaphor can stand alone in communicating it's message.

The second type of metaphors described by Lakoff and Johnson (1980) are the orientational metaphors. These represent an entire system's organization being communicated in a tandem relationship with one another. In other words, the metaphor is not simply a one to one correspondence (e.g., THOUGHTS ARE LIKE WATER). Instead, in orientational metaphors, an entire system of concepts are structured in relation to one another. Examples of orientational metaphors are HAPPY IS UP and SAD IS DOWN. These two metaphors cannot exist without each other. Sad is down when in
relationship to happy. They are called orientational metaphors because they typically pertain to spatial orientation (up-down, front-back, deep-shallow, on-off, etc.).

Ontological metaphors, the third type of metaphor described by Lakoff and Johnson (1980), allow humans to view activities, emotions, ideas, etc. as quantifiable entities or substances. Quantifying these abstractions permits humans to reason about them, group them, place them in categories, and otherwise contain them. For example, the MIND AS A MACHINE metaphor allows one to view the different parts of the mind (memory, attention, personality, consciousness, etc.) as parts of a machine working together. In this way, if there is some dysfunction, there must be a broken part in need of repair - much like when one part of a machine needs to be fixed in order to fix the entire machine. In terms of emotion, an ontological metaphor is especially important in containing one's emotions so that they do not overwhelm. For example, the metaphor ANGER IS BOILING WATER suggests that one may control anger by removing the heating element or the object causing the anger.

Lakoff and Johnson (1980) also describe several other more uncommon forms of metaphor. Personification is giving life to a lifeless concept or object. For example, the metaphor INFLATION IS AN ENEMY personifies inflation with human-like qualities. Even the personification of death is embedded in almost every cultural mythos. Other forms of metaphor include metonymy (using one entity to refer to another that is related), synecdoche (using a part to stand for the whole), and exaggeration (exaggerating the language to indicate intensity or severity).
Metaphor as Communicative Enhancement

The last peculiarity of consciousness to which attention is to be drawn is this first rough description of its stream in that it is always interested more in one part of its object than in another, and welcomes and rejects, or chooses, all the while it thinks. (James, 1890, p. 224)

The quote above is a small remark on the "stream of consciousness" metaphor coined by the father of American psychology, William James. Within *Principles of Psychology*, James utilizes a plethora of metaphors to describe every aspect of human functioning. He stated, "...the mind is at every stage a theatre of simultaneous possibilities" (1890, p. 289, italics added) and "Just so the world of each us, howsoever different our several views of it may be, all lay embedded in the primordial chaos of sensations, which gave the matter to the thought of all of us indifferently" (1890, p. 290, italics added). He also compared selective attention to the technical aspects of music, perception to architecture and painting, and consciousness to sculpting.

The metaphoric theme of James' writings is visual art. This may have been because James' first vocation (as he referred to it) was as an artist. He studied art in American and European universities as early as age 18 and eventually became the apprentice to William Morris Hunt, a late 19th century American painting pioneer (Leary, 1992). Therefore, James used his knowledge and worldview of visual art to explain his concepts in a rich depth for the reader. These metaphors not only made his work more coherent and enjoyable but also more universally appreciated by scientists, artists, and
humanists alike (Leary, 1992). This is a phenomenon that has helped the work of James to last for over a hundred years. For example, his STREAM OF THOUGHT metaphor is a commonly used term to describe mental processes. Leary (1992) studied James' writings and argued that James' use of metaphor in this context was critically important to the shaping of modern American psychology.

Metaphor is seen as a more effective and powerful form of communication than simply being direct. Perrine (1993) suggests that figures of speech enable the creator to add emotional intensity to an otherwise merely informative statement. Barker (1985) suggests that metaphors are more interesting to listen to than direct communication. They are more captivating and are therefore more likely to be heard.

Ortony (1975) presents three different hypotheses to the communicative value or even necessity of metaphor. First, the expressiveness hypothesis proposes that metaphors allow the individual to express in comparison to another concept what cannot be conveyed directly or literally. For example, the metaphorical statement I FELT LIKE I WAS WANDERING IN THE DESERT DYING OF THIRST conveys an entire world of experience (e.g., all consuming need, a sense of being lost, a feeling of dying, etc.) that would be difficult to express using literal language alone. Any attempt to change the statement into literal language simply would not accurately represent the nature of what the metaphor communicates.

Second, Ortony (1975) also proposed the compactness hypothesis, to highlight the way that metaphors allow the user to present the information in a more compact fashion
that giving the literal explanation would not accomplish. In essence, metaphor concisely contains a wealth of information that would require an entire paragraph to describe. Therefore, metaphor may often be a more succinct method of communication. For example the metaphor LOVE IS LIKE A RED, RED ROSE conveys much more information than a literal statement such as THE APPLE IS RED.

The third hypothesis proposed by Ortony (1975) is the vividness hypothesis. This hypothesis is based on the notion that metaphors help to capture the rich and detailed picture intended of the subjective experience. According to Ortony, metaphor is likely to activate associated perceptual and sensory images that add richness and emotionality to the experience. Using the above example, LOVE IS LIKE A RED, RED ROSE evokes an idiosyncratic series of tactile, gustatory, and visual associations that hold specific meaning to the listener. While this may also occur with literal language, metaphorical language is far richer, vivid, and expansive.

Metaphor and Semantics

Researchers in cognitive linguistics have noted a substantial philosophical body of research indicating that metaphor is solely the derivation of semantics and literal concepts and therefore not structurally cognitive (Daniels & White, 1997; Johnson, 1981). The semantic accounts of metaphor are based on the notion that the purpose of metaphor is merely a tool for the expression of words and language. Adherents to this view also contend that the rules governing metaphor are the same rules governing other common expressions of language. This philosophy is based on a largely rationalistic and
objectivist approach to psychology commonly referred to as first generation cognitive science (Daniels & White, 1997; Hayes & Oppenheim, 1997; Neimeyer, 1995b). Those adhering to a cognitive view of metaphor contend that metaphor is more than mere language and instead is structurally cognitive, or a basic building block of the mind. They argue that language is part of a phenomenological process of understanding the world. Less conservative views of the semantic role in metaphor suggest that metaphor has a semantic component in addition to its cognitive purpose. Sadock (1993) is a prime example of this less conservative view arguing that metaphor, or nonliteral speech, is governed by psychological principles and is not specifically linguistic. However, he would also argue that this “nonlanguage behavior” (i.e., metaphor and other figures of speech such as irony, euphemism, and hyperbole) is essential to “our understanding of the way that language functions as an integrated communicative system” (p. 43). Accordingly, metaphor is both a psychological process and a linguistic one.

Aside from the views of individual theorists on the role of semantics in the function and expression of metaphor, most if not all theorists would concede that semantics plays some role. Even Lakoff and Johnson (1980) with their staunch position on the cognitive nature of metaphor look towards semantics to understand its expression. The disagreement perhaps lies in the degree that semantics is involved. Most researchers would suggest that semantics plays a role but does not explain all of the variance. Kittay (1987, p. 10), for example, remarks:

Metaphors...have meaning and they therefore require a semantic account. But I
also hold that a semantic account does not give us a full comprehension of the ways in which we understand metaphor and must be supplemented by pragmatic considerations.

Consistent with this view, this project aims to include a semantic or linguistic component in order to fully understand metaphor's contribution to human knowing relative to the other constructs involved. This argument is based on the presented idea that metaphor is fundamental to human cognition and construct formation (Black, 1993; Collins & Gentner, 1987; Kempton 1987; Lakoff & Johnson, 1980; Leary, 1990; Ortony, 1993). It is an inescapable aspect of how humans think and express themselves. The semantics are simply the created rules to govern such a process within the boundaries of language.

Research in linguistics suggests that the differences between simile and metaphor, two semantically different but conceptually similar concepts, are somewhat benign (Glucksberg & Keysar, 1990). Proponents of this theory (referred to as the comparison theory) even postulate that metaphor is nothing more than implied simile (Miller, 1979). In other words, theoretically speaking, the presence of "is like" is not a necessary component of implying a comparison. This thereby weakens the argument that semantics plays a strong role. However, other researchers suggest that the use of metaphor or simile can be manipulated using several key linguistic variables (Gibb & Wales, 1990). For example, metaphors are much more likely to be produced to describe an abstract concept than a literal concept.
Recent reviews of metaphor literature have noted an insurgence of studies examining metaphor comprehension leaving metaphor production relatively unstudied (Gibb & Wales, 1990). Research on metaphor comprehension is concerned with how individuals understand and process metaphors while research on metaphor production seeks to examine why individuals utilize metaphors in general and why they use certain types of metaphors. The present study seeks to examine metaphor production rather than comprehension. McCurry and Hayes (1992) reviewed the contrast between the experimental body of metaphor literature (i.e., those who have basic experimental questions regarding metaphor) and the applied body of literature (i.e., those who have studied the use of metaphor in an applied setting). They found that very little research that overlaps these two bodies of literature. The present research seeks to fill that gap by asking questions applicable to both applied and experimental settings.

**Metaphor as Tool of Knowing**

Language is vitally metaphorical; that is, it marks the before unapprehended relations of things and perpetuates their apprehension, until words, which represent them, become, through time, signs for portions or classes of thought instead of pictures of integral thoughts: and then, if no new poets should arise to create afresh the associations which have been thus disorganized, language will be dead to all the nobler purposes of human discourse. (P.N. Shelly, A Defence of Poetry, in Abrams, 1993, p. 123).

Recently, metaphors have played a major role in cognitive theory and
epistemology. For example, in the study of cognitive organization, metaphor has been implicated as fundamental to knowing (Gentner & Holyoak, 1997). Lakoff and Johnson (1980, p. 3) point out that:

metaphor is pervasive in everyday life, not just in language but in thought and action. Our ordinary conceptual system, in terms of which we both think and act, is fundamentally metaphorical in nature.

Leary (1990) similarly contends that “all knowledge is ultimately rooted in metaphorical modes of perception and thought” (p. 2). Bateson (1979) has remarked that metaphor is the logic of nature; an inescapable tool for living systems. He presented this humorous story to make his point:

A man wanted to understand the mind, not in nature, but in his private large computer. He asked it, “Do you compute that you will ever think like a human being?” The machine then set to work to analyze its own computational habits. Finally the machine printed its answer on a piece of paper, as such machines do. The man ran to get the answer and found, neatly typed, the words: “THAT REMINDS ME OF A STORY.” (p. 14)

The terms used to describe this feature of human cognition are varied. For example, metaphorical modes of thought have been referred to as mental analogies (Gentner & Holyoak, 1997), conceptual archetypes (Black, 1962), conceptual metaphors (Lakoff & Johnson, 1980), main metaphors (Koch & Deetz, 1981), implicit metaphors (Baxter, 1992), mental models (Collins & Gentner, 1987), analogical maps (Collins &
Gentner, 1987), root metaphors (Pepper, 1942), and folk theories (Kempton, 1987). However, all of these various names refer to the same cognitive process, which may be captured by the following statement: humans learn, categorize, and understand novel aspects of their world by applying what they know to what they do not know. In other words, metaphorical knowing is a type of generalization of the familiar to the not familiar such as when the body (unfamiliar) is viewed as a machine (familiar) or the mind is viewed as a computer. These metaphors are not only linguistic in nature, but structural: the known concept’s cognitive structure is “mapped onto” the unknown conceptual framework.

As Kempton (1987) explains, folk theories (another term for conceptual metaphors) allow humans to design and implement predictions, which guide behavior. Collins and Gentner (1987) similarly state that mental models (or conceptual metaphors) are used to comprehend the nature of reality. Ardichvili (2001) suggests that metaphors are useful for understanding one’s internal world as well as for exploring one’s self in relation to occupation. He theorized that discovering one’s predominate metaphor for life helps one to seek out experiences that satisfy that metaphor and thereby satisfy the self. Kovecses (1986, p. 117) states that “basic-level metaphors allow us to comprehend and draw inferences about...[emotion] concepts, using our knowledge of familiar, well-structured domains.” In sum, metaphors are tools for interpreting, predicting, and understanding the internal and external world of experience.

Lakoff and Johnson (1980) have shown that many domains of human experience
are conceived metaphorically. Arguments may be viewed metaphorically as a war ("I demolished his argument, I've never won an argument with him; You disagree? Okay shoot!"). Similarly, time may be viewed metaphorically as money ("You're wasting my time; Is it worth your while?; The flat tire cost me an hour."). Marriage may be seen as a manufactured product or an ongoing journey (Quinn, 1987). Emotions such as anger may be viewed as a hot liquid in a container (Lakoff & Kovecses, 1987). These metaphorical systems appear to be inherent to the human experience. Kennedy and Merkas (2000) performed an interesting experiment supporting this point in which a blind man drew several pictures of wheels in motion. Sighted individuals were able to recognize the various types of motion independent of the blind man. In more detail, the blind man was asked to draw wheels in motion and he created a series of pictures. These pictures were shown to sighted individuals and asked to identify what the blind man was drawing. The individuals rightfully identified that the blind man was drawing wheels in motion. These researchers concluded that metaphoric conceptions are based on internal systems of organization rather than a simple reflection of a stimulus.

Support for the presence of an inherent conceptual metaphor system has even come from the physiological realm. For example, Papagno (2001) found that metaphors are not connected to the general cognitive and language decline associated with early Alzheimer's Disease. It was noted that the use of metaphor as well as the comprehension of metaphor seemed to be related to deeper cognitions and processing, typically associated with late cognitive loss. In a case study of a woman with Down's Syndrome,
Papagno and Vallar (2001) found that she lacked the ability to produce and understand metaphor even though her linguistic and semantic abilities were intact. They theorized that the ability for metaphor may be a separate function from linguistics. A similar phenomenon has also been observed in children with autism (Dennis, Lazenby, & Lockyer, 2001).

Therefore, how do individuals develop the ability to utilize this method of understanding? Children have been noted to develop metaphoric ability at a very early age and this cognitive ability is similar in structure and purpose to adults (Winner, 1979). This can be casually observed in everyday life. Parents will commonly use an understood concept (the source) to help their child to understand a new concept (target). For example, death is commonly explained as A LONG SLEEP, or as BROKEN. Children many times use the metaphor of the self to understand difficult scientific concepts such as the SUN’S GOING TO SLEEP, A DOLL HAVING A BOOBOO, THE SKY IS ANGRY, a small object is a BABY, etc. They understand how something works based on how their personal experience or body works. Holyoak and Thagard (1997) gave a case example of Aaron, a 2-year old boy who would upon receiving a “bump on his head” receive from his mother kisses to “make it better.” One day, however, his mother bumped her hand and Aaron in turn gave her a kiss to make it better. Aaron’s reaction was an example of analogical thinking – using the framework of a familiar experience to help him to understand a novel experience. In this example, Aaron showed that he not only could reproduce an observed behavior but also understand and apply it as
well. Therefore, he must have been able to take his understanding of receiving a kiss to
make it better to the novel experience of giving a kiss to help his mother's hand feel
better. This is many times referred to as a mapping process in which the known
experience acts as a mental map for the unknown experience.

This process begins as early as verbalization begins. Some would suggest that it
even begins at a pre-verbal stage of development. Nativists argue that language
development is closely correlated with the maturation of the brain (Crain, 1992). Within
this view, language and metaphor are essentially inherently human. Chomsky (1968)
even proposed that the human brain is equipped with a Language Acquisition Device
(LAD) that preprograms the ability to acquire language. Whorf (1956) went so far as to
suggest that language precedes many thought processes and that the language we learn
determines the way we think. Hoffman and Kemper (1987) reviewed many reaction time
studies measuring the amount of time it takes to comprehend a metaphor and concluded
that humans are predisposed to understand metaphorical language. Winner, Engle, &
Gardner (1980) found that children at least as young as two years could understand
metaphors if the comprehension task was simple. This data supports Vygotsky’s (1962)
view that thought and language develop interdependently at about two years of age when
the child begins to understand the symbolic meanings of words. Although some
researchers have shown that four and five-year-old children exhibited metaphoric
understanding, rather than simple verbal paraphrasing, during play enactment (Ortony,
1986), other researchers have found no difference in metaphor comprehension between
ages 9-14 (Power, Taylor, & Nippold, 2001). Nevertheless, recent research suggests that while children may be able to conceive metaphor, adults tend to be more metaphorical. For example, Winer, Cottrell, Mott, Cohen, & Fournier (2001) found that adults were more likely to endorse non-literal statements such as “my ears can see” as true than were children.

Traditional theories of metaphor are based on the notion that an individual must reject the literal interpretation as false and then somehow find a nonliteral understanding that fits the context of the conversation (Ortony, 1979). These theories hinge on certain assumptions. First, literal interpretation is somehow superordinate to other forms of communication, including metaphorism (Glucksberg & Keysar, 1990). Second, a metaphorical understanding requires a defective literal meaning to activate. Third, a metaphorical understanding requires additional inferential work to derive the contextual meaning and find the similarity. This would require more advanced cognitive processing as well as more processing time.

Gluckberg and Keysar (1990) did not find evidence to support these assumptions and instead offered an alternative possibility. They point out that at times, a similarity exists between the target and the source that is able to be determined. Yet, at other times, the metaphor creates the similarity itself (Black, 1962; Lakoff & Johnson, 1980; Schon, 1979). Thus, Gluckberg and Keysar (1990) proposed that metaphor comprehension does not involve making similarities at all, but instead the comparative source informs the listener about qualities of the target object. Thereby, the process is a descriptive cognitive
function rather than a linguistic processing. For example, with the metaphor BOB IS A TOMATO, the listener's comprehension does not simply compare Bob to a tomato, but instead Bob acquires some of the characteristics of a tomato. This is a creative process in which new insight and understanding is formed.

Most recently, metaphorical knowing has been termed analogical reasoning (Gentner & Holyoak, 1997; Gentner, 1983). Gentner and Holyoak (1997, p. 32) define analogy as “the process of understanding a novel situation in terms of one that is already familiar.” Essentially, analogical reasoning researchers study metaphor from a purely cognitive stance rather than a psycholinguistic perspective. Work in this area first began by looking at simple analogies like those used in intelligence tests, such as MOUTH IS TO TEETH AS HEAD IS TO WHAT? (Gentner & Holyoak, 1997). Gentner and his colleagues subsequently became interested in analogical reasoning by noticing that two objects or domains became similar by their relationship with each other rather than any features of the individual domains (Gentner, 1983, Gentner & Markman, 1997). For example, THE FLOW OF ELECTRONS THROUGH A CIRCUIT IS LIKE THE FLOW OF PEOPLE THROUGH A TUNNEL works as an analogy not because electrons are like people but the relationship to each other is similar (Gentner & Holyoak, 1997). In addition, these researchers found that analogies tend to involve higher order relationships such as causal, mathematical, or functional relations (Gentner & Markman, 1997). Therefore, the two domains in the analogy can be expected to behave in similar ways. In the above electron example, if a resistor is placed in the flow electrons, it will cause a
similar decrease in flow as placing a narrow gate in the tunnel would decrease the flow of people.

Murphy (1996) presents two modern theories of metaphorical representation. The first interpretation, called the strong version, holds that a particular concept (concept A) is understood through its relation to another concept (concept B) that is known and different (Murphy, 1996). This is the classic analogical reasoning model because concept A is actually structured like concept B. By way of contrast, the weak version states that concept A is simply influenced by concept B but is not actually structured like concept B (Murphy, 1996). For the purposes of this study, the strong version of the theory will be endorsed, that is the notion that the metaphoric relation is actually structural in nature.

Paivio (1979) presents a series of three hypotheses (interpretations) regarding metaphor representations. The first hypothesis is based on Murphy's (1996) strong version and views metaphor as "a compact way of representing the subset of cognitive and perceptual features that are most salient to it" (Paivio, 1979, p. 152). In other words, according to this hypothesis, metaphor permits larger "chunks" of information to be converted from the vehicle to the topic. Paivio's second hypothesis is called the "inexpressibility" hypothesis, which suggests that metaphors allow persons to simply describe the indescribable. His third hypothesis is based on the proposal that metaphors allow humans to remember or constitute the experience more effectively. Again, for the purposes of this study, Paivio's (1979) first hypothesis will be the guiding framework, that is the view that metaphor allows chunks of information to be transferred from one
concept to another.

A great deal of research in the field of linguistics supports the metaphor theory. Gibbs (1992) has shown that those who read a paragraph with metaphors in it found the paragraph easier to understand. This supports the metaphor axiom that humans use metaphors as a tool for learning and understanding. Sweetser (1990) has shown that humans use metaphors related to the senses to describe comprehension and knowledge (i.e. "I see your point") and argued that this is due to the fact that persons actually acquire knowledge using their senses. Lakoff (1993) states the use of proverbs (metaphors), as a teaching method is more evidence that metaphor facilitates learning. Lakoff and Johnson (1980), as well as other researchers in philosophy and linguistics (Baxter, 1992; Black, 1962; Leary, 1992; Lyddon, 1989b; Pepper, 1942), have even proposed that metaphor shapes the way in which people view the world. These researchers have theorized that metaphor is an organizing framework for individual difference in worldview.

Metaphors, Learning, and Change

The drive towards the formation of metaphors is the fundamental human drive, which one cannot for a single instance dispense with in thought, for one would thereby dispense with man himself. (Nietzsche, "On Truth and Lies in the Nonmoral Sense," an unpublished essay - *Uber Wahrheit und Luge im Außermoralischen Sinn*, 1873)

Metaphors have a lengthy reputation of being useful in psychotherapy as well as other applied settings and have been associated with "good moments" in therapy.
throughout the applied literature (Mahrer & Nadler, 1986). In treatment, metaphors provide a medium for conveying information indirectly thereby providing more force and interest than simply advising the individual what they should or should not do (Barker, 1985). This indirect provision of an idea is much likely to be resisted and the clinician is not seen as moralistic. Adams and Chadbourne (1982, p. 510) remark that a “therapeutic metaphor is the use of this figure of speech in a way that lets clients recognize themselves, their problems, and possible new alternatives in a nonconfrontative and nonthreatening way” thereby reducing resistance (Rule, 1983; Welch, 1984). Less resistance increases the chance of the information being understood at an explicit tacit-unconscious level (Barker, 1985). In addition, metaphors provide the individual the opportunity to understand and process the information in an idiosyncratic way. In a way, metaphors resemble a projective test in that every person will understand the metaphor in a slightly different manner drawing his or her own conclusions and meaning. In fact, the German term (Übertragung) for transference, a process of relating to a therapist as a past relationship, literally translates as “metaphor” (Szajnberg, 1985). Metaphors are useful because they are flexible and can be molded according to the clinician’s or storyteller’s needs. For example, the metaphor THE EARLY BIRD GETS THE WORM can be used to give advice, suggest solutions to problems, present opinions, impart information, depending upon the specific purpose of providing the metaphor. Metaphors can be invaluable in establishing rapport with clients in counseling because they allow the client to convey his or her unique perspective in way that the therapist can understand. In turn,
therapist sensitivity to client generated metaphors is significant to empathy and
relationship building (Lyddon, Clay, & Sparks, 2001).

Metaphor has gained widespread use as a tool for treatment with children. For
example, the Childswork/Childsplay Early Prevention Series publishes a number of
metaphoric stories that help children adjust to various psychological issues. *The Penguin
Who Lost Her Cool* is a story about controlling anger response (Sobel, 2000); *The Hyena
Who Lost Her Laugh* is a story about feelings of depression (Lamb-Shapiro, 2000a); *The
Bear Who Lost His Sleep* is a story about anxiety and worrying (Lamb-Shapiro, 2000b);
and *The Lion Who Lost His Roar* is a story about fear and panic (Nass, 2000). Each of
these books allows children to metaphorically make the connection between the animal in
the story and their own experience.

Milton Erikson was a pioneer in using metaphors in psychotherapy as he
frequently used metaphors and stories in his teaching, writing, and his unusual array of
therapeutic techniques. So valuable were his anecdotes and metaphors that Rosen (1984)
compiled a collection of 117 stories that Erikson used in conducting psychotherapy in a
book called *My Voice Will Go With You*. Zeig (1980), in an introduction to one of
Erikson’s other books filled with stories presents some of the ways in which Erikson used
metaphor or anecdote. First, he used metaphor to make or illustrate a point. This is a
way in which the presenter can connect more logical information to the emotional side
and achieve not only understanding or insight but also second-order, or deeper change.
Metaphors also suggest solutions without overtly giving advice. They help people begin
to recognize themselves. This takes advantage of the fact that metaphors are less direct and therefore likely to be resisted. Therefore, Erikson found that he could give personal feedback with a greater chance of being heard rather than dismissed. For example, in the biblical story of the King of Israel, David, and his counselor, Nathan, David has a soldier killed so that he can marry his wife. Nathan hears of this and attempts to give David the feedback that he has committed a crime. Instead of blatantly accusing David of the crime, he presents a story of a man who commits the same crime asking David for his advice on justice. The metaphorical story provided Nathan the opportunity to give important feedback but also to avoid resistance.

Similar to the last point, Erikson used metaphor to “seed” ideas to the listener (Zeig, 1980). This strategy is based on the assumption that the metaphor is heard at a subconscious level even if it is not fully understood explicitly. Other purposes of metaphor were controlling the therapeutic relationship, embedding directives, decreasing resistance, reframing, and redefining problems, ego-building, modeling a way communicating, reminding clients of their resources, and desensitizing people from their fears. Overall, Erikson found metaphors useful in their ability to communicate a message indirectly so as to bypass therapy resistance, resistance to change, and social desirability.

McCurry and Hayes (1992) reviewed a number of applied studies utilizing metaphor for therapeutic change. From their review, McCurry and Hayes developed a number of hypotheses that constitute a “good” therapeutic metaphor. The researchers found that the metaphor needs to be developmentally appropriate, applicable, evocative,
personal to the individual, and consistent with the breadth of the problem.

First, a metaphor should be constructed to match the developmental level of the client or participant. Simply stated, the metaphor will not be effective if they are not conceptually able to grasp it. Angus and Rennie (1988) actually found that when a client does not understand the metaphor being provided, it may interfere with treatment.

Second, a metaphor should be constructed to be both applicable and common sense oriented. This means that the metaphor should not be overly intellectual and abstract so that it can be a useful heuristic not weighted down by excessive analysis. The heuristic should also be able to be applied in their life in some way. For example, the metaphor of THERAPY IS A JOURNEY OF DISCOVERY should suggest to the client a particular framework for the process, what to expect, and what limitations might exist in therapy.

Third, a metaphor should evoke a rich sensory experience. This is one of the major benefits of using metaphors; they access a wide array of cognitive, sensory, and emotional structures. The ability of metaphor to evoke this array of associations has even been implicated as the cause of the effectiveness of metaphor (Haskell, 1989; Muran & DiGiuseppe, 1990). Fourth, a metaphor is most effective when drawn from the individual’s life and experience so that the metaphor is personal and likely to be activated in situations outside of the therapy hour. Fifth, a metaphor should have multiple meanings if the client’s problems are diffuse but fewer meanings if the client’s problem is more constrained. For example, a phase of life difficulty in which the person is struggling with existential issues, a more ambiguous metaphor can help the person to
apply the meaning to it that they need. However, if a person is presenting with a specific disorder such as posttraumatic stress disorder, then a more specific metaphor consistent with his or her experience would be more useful in helping the client construct personal meaning related to the experience.

The use of metaphors, both at a literal and conceptual level, has become extremely prominent within the counseling literature as well as in the everyday practice of counseling and psychotherapy. Researchers have demonstrated usefulness of metaphor for a wide range of counseling issues. For example, the metaphor of a broken balloon has shown useful in helping children adjust to divorce (Huss & O'Connor, 1995). Metaphorical interventions have been applied to marriage and family counseling (Cornille & Inger, 1992; Tsonides, 1995), adjustment counseling (Bowman, 1992; Abell & Sommers, 1991), acculturation counseling of Spanish-speaking clients (Zuniga, 1991), counseling victims of incest (Abell & Sommers, 1991), couples therapy (Kaplan, 1994), career counseling (Amundson, 1997), rehabilitative audiology (Roberts, 1987), and prison inmate resistance (Romig & Gruenke, 1991). Metaphor is also commonly used in experiential therapy modalities such as adventure training, ropes courses, and relationship retreats (Luckner & Nadler, 1997). In such activities, the entire experience is designed to a metaphor for a greater psychological issue. For example, families experiencing trust issues would benefit from activities that demonstrate the importance of maintaining trust.

Barker (1985) presents an entire book on the subject of using metaphors within the context of psychotherapy. These include metaphors used for establishing goals,
uncovering developmental and relational patterns, suggesting solutions, helping insight, increasing motivation, reframing problems, decreasing resistance, modeling communication, establishing rapport, and working through a number of family and personal difficulties. The metaphors Barker uses throughout his book are in the narrative form, however. Nevertheless, these narratives apply the principles of conceptual metaphors. Barker points out that while individuals may hear the literal meaning of a metaphor on a conscious level, they will also perceive the symbolic meaning of the metaphor at a tacit or unconscious level.

Practitioners also suggest that metaphors can be used to help clients process depressed feelings and provide a framework for developing alternative metaphors of making meaning (Angus & Rennie, 1988; Carlsen, 1996; Kennedy-Moore & Watson, 1999; Watson & Greenberg, 1995). Jooste and Cleaver (1992) found that clients presented with a metaphoric discussion of their difficulties experienced an increase in self-awareness on reflecting upon the metaphoric meaning. According to their research, the metaphor stimulates a change process in which the metaphoric object acts a catalyst for self-awareness. In this way, metaphors can enhance creativity and reduce resistance.

Applications of metaphor have been forged in fields other than counseling. For example, Holbrook (1998) proposed the use of stereographic three-dimensional images, new technology being used as new research techniques, to metaphorically communicate the concept of maintaining proximity to the cutting edge of technology and thinking, gaining self-awareness, and promoting creativity. The metaphor of “magic” has been
used to understand the culture of Information Technology (IT) (Kaarst, Michelle, & Robey, 1999). For example, the role of those who run the IT department in an organization are compared to those who employed “magic” in earlier years. Using this metaphor, the authors were able to understand the IT culture; they are revered, mystical, powerful, and fearful. Toncar and Munch (2001) found that the use of “tropes” or metaphors in advertising enhanced the advertisement making it more memorable and persuasive to consumers.

Metaphor has also been used very commonly in the educational literature and educational settings. Hildebrandt and Oliver (2000), for example, introduced a metaphor of “the mind is a black box” to communicate concepts of theory formulation and scientific inquiry. According to these researchers, individuals reported that they enjoyed an educational activity more and the metaphor helped them better understand the development of scientific theories, conflicting theories, and the process of social collaboration in the process of scientific investigation. Orland (2001) found that individuals learning new tasks were able to adjust and learn the new tasks quicker when using the metaphor of “learning a second language.” According to Orland, the metaphor “learning is constructing” has been related to improvements in persons’ metacognitive abilities (the ability to think about thinking) and increase persons’ future learning potential.

As previously mentioned, the study of analogical reasoning has yielded much fruit in applying metaphors to education, politics, business and industry, and everyday life.
Schools use analogical reasoning to teach problem solving of real world problems and expand the limits of the classroom (Kolodner, 1997). This is referred to as case-based reasoning and includes such examples as building solar cars to learn about alternative fuels. Within the realm of business and industry it is many times referred to as a comparability analysis (Klein, 1987). The comparability analysis was created in order to predict the path of a new product, for example a new airplane, without developing costly and often too complex prediction models. Instead, predictions for the new product are based upon old products – that is, reasoning by analogy. Even George Bush, Sr. used analogy to muster support for the Persian Gulf War. He compared Saddam Hussein with Adolf Hitler and the invasion of Kuwait with the invasion of Poland. In this way, Bush was able to paint Saddam as an expansionistic dictator bent on world domination. This analogy also implied that the U.S. would need to get involved or eventually be attacked (Spellman & Holyoak, 1992). It could be argued that George Bush, Jr. has made similar comparisons by labeling certain countries as being a part of the “axis of evil,” thus implying a coalition of evil doers. “Axis” was also the term used for Hitler’s regime during World War II. In addition, by implication, if “they” are evil, then we (The United States) and our actions must be “good.”

A number of methods have been employed to facilitate the expression or elicit metaphor both in treatment and in research. In the treatment realm, Safran, Vallis, Segal, Shaw (1986) recommends using vertical exploration or a systematic analysis of themes consistent across situations explored, the clients themselves, and their thought patterns.
Martin (1985) found that stream of consciousness could also be an effective tool for uncovering tacit, assumptive metaphors. However, these are both within the context of a therapeutic relationship and beg the question of how metaphors are assessed within a research context. Baxter (1992) studied relationship metaphors among college students. The metaphors about relationships were assessed through a detailed qualitative writing assignment. The participants were to write about a current or past relationship and assign various sections as chapters. The chapters then would have titles and the entire book would have a table of contents. Then the researchers asked the participants to describe each chapter. The data used were the chapter titles and the verbal descriptions of each chapter. Using this method, Baxter was able to elicit a number of relationship metaphors. For example, Baxter determined that the two most common metaphors were WORK and JOURNEY OF DISCOVERY. Using Baxter’s relationship metaphors, Adams (2000) then took those relationship metaphors and developed a quantitative measure of relationship metaphors.

Most metaphor research has relied heavily on the use of in-therapy transcripts utilizing a qualitative analysis of session material (Angus & Rennie, 1988; Jooste and Cleaver, 1992; Levitt, Korman, & Angus, 2000; Martin, Cummings, & Hallberg, 1992; Russell, 1998). Other research projects have turned to case study analyses (Cirillo & Crider, 1995; McMullen, 1989) or counselor or researcher self-report (Bayne & Thompson, 2000). Some studies have introduced or interjected metaphors and observed participant reaction (Jooste & Cleaver, 1992; Levitt, Korman, & Angus, 2000; Martin,
Cummings, & Hallberg, 1992), while others have simply analyzed the participant’s spontaneous production of metaphor (McMullen, 1989; Russell, 1998). Gibb and Wales (1990) created a sentence-completion task that was specified for their task in order to assess metaphoric ability. For the most part, research in metaphor has been limited to lengthy interview formats (Baxter, 1992; Emanatian, 1995; Fainsilber & Ortony, 1987) or analyses of common language (Kovecses, 1986; Lakoff & Johnson, 1980).

Root Metaphor Theory

Stephen Pepper, an American philosopher producing his most influential works in the mid-1900s, wrote primarily in the area of aesthetics (the philosophical study of nature and creation) of man. His most famous work is concerned with the concept of “world hypotheses,” or cognitive models of the world based on the inferences and observations an individual makes (Pepper, 1942). As previously discussed, a world hypothesis (also called a world view or a world theory) is a metatheory that underlies one’s basic interpretation of the world and internal philosophies that organize experience and their understanding of that experience. Each world hypothesis is derived from a root metaphor: a root metaphor is a “common sense conceptualization of a domain, in accordance with which categorical concepts have been constructed” (Hayes, Hayes, & Reese, 1988, p. 98). The root metaphor works like this: the individual; wanting to understand the world and events observes the environment (Pepper, 1942). This person gravitates toward some common sense fact and then uses that fact as the basis for further interpretations and comprehension of the world (the root metaphor). This basic fact
begins to expand in structure defining each characteristic and becoming a well-developed and extensively challenged and tested theory or "hypothesis" of the world. The hypothesis, also called a worldview, has been shown to be correlated with personality characteristics (Johnson, 1984; Johnson, Germer, Efran, & Overton, 1988). In other words, those who have differing hypotheses also tend to have different personality portraits.

Each root metaphor has a set of defining categories or structural characteristics that act as "basic concepts of explanation and description" (Pepper, 1942, p. 91). Using this set of categories, the individual can study presented evidence, fact, and experience and interprets them in light of these categories. A root metaphor will need to undergo a great deal of development and refinement in order to expand it's scope and to prove adequate. Pepper outlined four "reasonably adequate" world hypotheses. He named them "reasonably adequate" because a world hypothesis ideally will be precise enough that only one interpretation of an event is possible for the individual and is unlimited in its scope enough to cover all potential events. In reality, however, no world hypothesis is perfect meeting both these qualities. The four reasonably adequate hypotheses that Pepper outlined are formism, mechanism, contextualism, and organicism.

The four world hypotheses are presumed to exist in a quadrant system (see Table 1) on opposing continuums (Pepper, 1942). Formism and contextualism are dispersive world hypotheses; this means that they take facts one by one and each one gets dealt with individually and interpreted as they come as independent units. Dispersive theories seek
to enhance understanding by examining the component parts. On the other side of this continuum, mechanism and organicism are integrative theories. Integrative theories attempt to examine facts in terms of how they are related to each other; how facts integrate and have relationships to one another. On the other continuum, formism and mechanism are analytic theories. Analytic theories seek to understand how something works and the facts function. Contextualism and organicism are synthetic theories; they seek to understand how something fits into the whole. These theories are not hierarchical (no theory is better than the other) and they are each completely independent from each other. Each world hypothesis even utilizes a different set of characteristics, some characteristics are even contradictory to each other. However, one theory cannot be used to refute, analyze, or criticize another theory. By the same virtue, no theory can be used to strengthen another even by one theory shortcoming.
Table 1

Quandrant System for the Four World Hypotheses

<table>
<thead>
<tr>
<th>Dispersive</th>
<th>Synthetic</th>
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<tbody>
<tr>
<td>Formism</td>
<td>Contextualism</td>
</tr>
<tr>
<td>Analytic</td>
<td></td>
</tr>
<tr>
<td>Mechanism</td>
<td>Organicism</td>
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Formism is derived from the root metaphor of similarity. It is based primarily in the “simple common-sense perception of similar things” (Pepper, 1942, p. 151). One can easily find things that are similar (and different) in the world. We are naturally attracted to seeing similarities and categories of things (e.g., trees, cars, types of people, etc.). Lyddon (1989b) proposed that psychological theories of personality type and the psychological diagnostic system fit best into the root metaphor. Discrimination of differences is carried out on the grounds of similarities and new categories can be created (Pepper, 1942). For example, there may be one blue sheet of paper and one yellow sheet amidst a large group of pink sheets. Therefore, the blue and yellow sheets are similar because they are both different than the pink. The formistic individual bases the
categories on character: "the qualities and relations that are tied to a given object" (Pepper, 1942, p. 154). Formists are not focused on systemic organization or interested in explaining relationships. Certain concepts can fit into several categories but the process of that organization is not important.

Mechanism is based on the root metaphor of the machine (Pepper, 1942). The focus of interpretation is on causal relationships and the relationships of their discrete parts. These parts are assumed to be independent from each other but also connected and related. Outcomes are believed to be predictable and require exerted force or energy. A mechanistic thinker will view the world as a machine; history is predictable, laws of science are based in cause and effect, etc. Pepper used the example of a lever resting on a fulcrum. The two objects exist independently but exist in such a relation to each other that energy applied to one would have predictable, measurable, and controllable effect on the other. For instance, if one applied pressure to the lever, it would pull up a weight on the other side. Lyddon (1987) theorized that psychological theories such as early forms of behaviorism utilize a mechanistic underpinning. Also, individuals preferring a more behavioral therapeutic approach have been found to subscribe to a more mechanistic worldview (Lyddon, 1992). Due to the integrative nature of mechanism, the parts of the machine are assumed to fit together. Therefore, the goal of mechanism is to discover the parts of the "machine" and understand how they relate to each other.

Previous research on mechanism has also shown a number of correlative characteristics associated with it (Johnson, 1984; Johnson et al., 1988). Mechanism was
found to be correlated with other-directedness or external orientation (Johnson, 1984). In other words, those endorsing the mechanistic paradigm also tended to be guided by external factors such as the expectations of other people. By the same token, they also tend to base their identity on social norms and external factors. In comparing mechanism with the Myers-Briggs Type Indicator (MBTI), it was found to be correlated with a Sensing personality type: detail oriented, like facts, routines, procedures, information gained through the five senses. These results were also found with other comprehensive personality instruments such as the California Personality Inventory as it was concluded that mechanistic individuals were more concrete, down-to-earth, and socially hesitant (Johnson et al., 1988). Mechanism was associated with Conventional interests as measured by Holland’s Vocational Preference Inventory: orderly, conforming, self-controlled, and practical (Johnson, 1984). All of these personality traits are consistent with the mechanistic worldview based on stability, objectivism, realism, and a relational style of environmental determinism, reaction, and passivity (Johnson et al., 1988).

Contextualism is based on the root metaphor of the historic event (Pepper, 1942). By “historic event” Pepper was not referring to a dead, past event but rather a living history that is dynamic and currently active. Examples of such events are making a boat, running a race, laughing at a joke, etc. Each of these events has two characteristics: quality and texture. Quality is the experiential aspect or nature of an event while texture involves the details and relationships that comprise an event. Quality is comprised of spread and fusion. The event is believed to be related to the past and future of the event –
this is called spread. Fusion is the integration of the textual details of the event. In
essence, contextualism focuses on a given object by looking at it as a whole in which the
parts are integrated and related. Phenomena are always understood in their “contexts.”

Organicism is based on the root metaphor of the process of organic development
such as can be found in living, growing, organic systems (Pepper, 1942). Like
contextualism, organicism does not map well onto its root metaphor in a linear, common
sense fashion. In addition, contextualism and organicism are very similar in many ways.
For example, both place emphasis on events in their surrounding structures and find their
meaning form the holistic organization of the many events (in other words, they are both
synthetically based). However, in some ways they are dramatically different and even
opposed. For example, contextualism focuses on the time and duration of an event, while
organicism is not concerned about time but instead about process. In organicism,
constant and dynamic change is a given while stability is an anomaly to be explained. An
example in psychology would be developmental stage models. For instance, a person is
expected to flow from one stage to another in an organized fashion (Hayes et al., 1988).
The whole is the basic building block of a concept – the parts are meaningless unless they
help the individual to understand the entire concept or the whole (Pepper, 1942).
Organicism has been associated with constructivism – the world is an actively construed
part of one’s developmental process (Hayes et al., 1988). Empirically, Lyddon and
Adamson (1992) found that persons with a commitment to organicism equally preferred
three different counseling approaches: Constructivist, Behaviorist, and Rationalist. It was
suggested that perhaps organicists are “more flexible in their decision making and, as a result, are capable of seeing the potential value of different approaches to counseling.” (Lyddon & Adamson, 1992, p. 45)

Having been examined and compared with certain measures of personality, those subscribing to organicism seem to possess certain traits and characteristics. Organicism was found to correlate with self or inner directedness similar to an internal locus of control (Johnson, 1984). Individuals high in organicism also have a tendency to base their identity on personal values, thoughts, and experiences and less on social mores, beliefs, and expectations. Johnson et al. (1988) found that organismic individual tended to be intellectual, aesthetic, intuitive, innovative, and socially skilled. On the Myers-Briggs Type Indicator and on vocational inventories, organicism was highly correlated with Intuiting type (dealing with abstract, imaginative ideas, and a “sixth” or “gut” sense) and Artistic interests respectively (Johnson, 1984; Johnson et al., 1988). Organicism seems to also be correlated with fluidity, openness to change, non-conformity, imagination, empathy, interpersonal tolerance, and independence.

Several instruments have been developed to measure Pepper’s (1942) root metaphor theory. The first measure of note is the World Hypothesis Scale (WHS) developed by Harris, Fontana, and Dowds (1977). The developers found a number of construct validity correlates. First, they found that individuals prescribing of a particular world hypothesis tended to prefer occupations that typified that particular worldview. The same results were found if individuals were asked to imagine their ideal occupation.
In using the WHS, compatibility of matching root metaphors was positively correlated with successful friendships. Root metaphor was also correlated with participation in discussion in group treatment such as an Alcoholics Anonymous group. Last, clients receiving a psychotherapeutic treatment approach consistent with their own root metaphor perceived the therapy as more appealing. Several years later, Germer, Efran, & Overton, (1982) developed the Organicism-Mechanism Paradigm Inventory, an instrument “designed to assess an individual’s tendency to think and behave in accordance with one or the other paradigm” (p. 1). This instrument will be used in the current study and therefore will be reviewed later in the proposal.

Epistemology: Philosophy, Personality, and Preference

Across a number of domains of inquiry, many scholars suggest that all humans possess a personal metatheory or worldview that is comprised of a system of values, underlying assumptions, and working beliefs that guide how they interpret the world around them (Hillerbrand, 1988; Lazarus, 1999). This is the subject of epistemology: the study of the knowing process and of knowledge, it’s sources, nature, and validation. Thus, in its simplest connotation, epistemology refers to the theory of knowledge. The term epistemology is derived from the Greek word *episteme*, meaning knowledge, and *logos*, which means discourse or theory. Epistemology focuses on three central questions pertaining to the cognitive or psychological domain (Lyddon, 1992). First, where does knowledge originate? Second, Does reality and truth exist outside of our ability to know it? Third, how do we know when we are perceiving reality incorrectly? Historically,
Aristotle was one of the first philosophers to examine the study of knowledge. Aristotle identified three types of knowledge: theoretical, qualitative, and performative (Hillerbrand, 1988). Most knowledge, according to Aristotle, is theoretical knowledge; that is knowledge that consists of generalizations about the world. For example, an individual who concludes, “all men were once boys” is using theoretical knowledge. This form of knowledge is includes metaphoric thought. Some knowledge is qualitative knowledge. This is knowing what achieves good ends and knowing what is morally and ethically right. Aristotle understood it as knowledge of the arts and morality or ethics. The last area is performative knowledge: knowing how to make something or perform. It is many times referred to as the technical knowledge. For example, knowing how to ski is performative knowledge.

Epistemology has historically been a specialty area of philosophy but in recent years has begun to significantly play a role in the interdisciplinary field of cognitive science and the field of psychology (Hillerbrand, 1988; Lydon, 1989a, 1989b, 1991; Pillow, 1999; Schacht & Black, 1985). As epistemology and psychology became more closely acquainted, it became desirable to find ways of objectifying and studying individual differences in epistemology, or knowing. Within the philosophical and personality literature, Joseph Royce advanced the study of individual differences in epistemology by developing a tripartite model of epistemological preference. The three different preferences are rationalism, empiricism, and metaphorism (Royce & Powell, 1983). They are essentially basic methods for validating, testing, and understanding the
world; they are the processes by which humans interact with the world. These styles not only assist in organizing the world, but they also act as superordinate personality constructs that determine lower personality traits and integrate both affect and cognition. These styles then determine cognitive and affective traits that will become activated within certain situations in which a number of alternative possibilities exist. According to the personality theory, the affective structure system is based on needs such as achievement, self-protection, and affiliation. This affective system interacts with one's cognition, physiology, and behavior to create understanding and awareness – called a cognitive-affective style. Therefore, the epistemic style is comprehensive in incorporating emotional, physiological, behavioral, and cognitive components. This is why Royce and Powell (1983) theorized that epistemic style is super-ordinate to personality – the style interacts with other psychological components in order to integrate personality with the world.

Royce and Powell (1983) also understood these epistemic styles as worldviews that depend upon a unique criterion of validity. It is also important to realize that while each of the three processes utilizes separate psychological processes to evaluate the validity of knowledge, each source of knowledge also involves uncertainty and the possibility for error. In addition, although each person possesses the ability to view reality from each of the three lenses, he or she will tend to have a dominant style. Royce and Mos (1980) operationalized this theory into an instrument called the Psycho-Epistemological Profile (PEP). This instrument, a 90-item Likert-type self-report
questionnaire, yields three scores; one score for each of three epistemological preferences. A description of these three styles follows.

Metaphorism describes the worldview determined by a commitment to metaphoric experience to validate reality (Royce & Mos, 1980; Royce & Powell, 1983). The criterion of truth is based upon either the universality or idiosyncrasy of the processed information. An individual utilizing this style tests one's ideas and awareness in symbolic terms that have the greatest degree of generality; this process is both conscious and tacit or unconscious and focused on the processing of internally generated forms or symbols of information. A valid construct is one that generalizes to the greatest number of awarenesses, concepts, situations, people, etc. An invalid concept is one that remains idiosyncratic to a particular awareness, concept, situation, person, etc. These individuals tend to activate their creative side more readily; they also tend to appreciate literature, nature, social service, music, and philosophy as well (Royce & Mos, 1980). For example, a correlational study using the Allport-Vernon-Lindzey Study of Values, found metaphorism to significantly correlate with aesthetic and religious type values. Royce and Mos also found that metaphorism was positively correlated with the Myers-Briggs Type Indicator (MBTI) constructs of intuition, perceiving, and feeling. This suggests that those who exhibit a dominant metaphoric style tend to symbolize their experience more readily. However, from an emotional perspective, these data also suggest that those who are more feeling oriented may use symbolism more to understand and validate that experience.
Rationalism is a worldview based on the notion that validity of reality is a function of rational thought and logical consistency (Royce & Mos, 1980; Royce & Powell, 1983). Persons with a dominant rational epistemic style utilize logical thinking, rational analysis, and synthesis of ideas in order to glean the validity of truth. Therefore, the criterion for what is true is based on the logic of the awareness, concept, person, idea, etc. — "focus is on the logical consequences of information currently available to the organism" (Royce & Mos, 1980, p. 6). The invalidation of awareness is the product of illogic. Rationalism is more dominant among persons in the theoretical sciences such as physics, mathematics, office management, and teaching (Royce & Mos, 1980).

Rationalism was found to be positively correlated with MBTI constructs of thinking, sensing, and judgment. In a correlational study with the Allport-Vernon-Lindzey Study of Values, rationalism was found to positively correlate with theoretical values and be negatively correlate with aesthetic values. The study also found that rationalism was associated with a certain amount of emotional aloofness that seemed to parallel the commitment towards logical analysis (Royce & Powell, 1983).

Persons with a dominant commitment to Empiricism tend to relate to the world through their senses and observations (Royce & Mos, 1980; Royce & Powell, 1983). Their view of reality is based on external experience and the reliability of observations. The empirical individual utilizes active perception and the pursuit of sensory experience in order to seek validity of awareness, concepts, people, ideas, etc. — "focus in on the processing of sensory information" (Royce & Mos, 1980). Knowledge is invalid if it
inaccurately reflects the properties of the "real" world. Empiricism is more dominant among persons in the physical sciences, law, politics, and mechanics (Royce & Mos, 1980). Empiricism was positively correlated with MBTI constructs of sensing and thinking; a negative correlation was found with intuition and feeling as well. In a correlational study with the Allport-Vernon-Lindzey Study of Values, empiricism was found to positively correlate with economic values and be negatively correlated with religious and aesthetic values.

Table 2
Epistemic Styles: Basic Cognitive Processes and Truth Criteria

<table>
<thead>
<tr>
<th>Epistemic Style</th>
<th>Cognitive Processes</th>
<th>Truth Criteria</th>
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<tbody>
<tr>
<td>Metaphorism</td>
<td>Symbolizing</td>
<td>Universal-Idiosyncratic</td>
</tr>
<tr>
<td>Rationalism</td>
<td>Conceptualizing</td>
<td>Logical-Ilogical</td>
</tr>
<tr>
<td>Empiricism</td>
<td>Perceiving</td>
<td>Perception-Misperception</td>
</tr>
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</table>

Research using the PEP has revealed a wide range of diversity and applicability in research spanning from developmental research, psychotherapeutic research, to training issues. Hill and Clark (1998) found that epistemology was related to childhood fantasy behavior and creativity. In this study, those who commonly engaged in childhood fantasy play subscribed to a metaphoric style. This epistemological preference was also positively correlated with creativity. The authors believe that fantasy play actually contributes to the development of a metaphoric style. In another study, the PEP revealed
that African American college students have lower rates of metaphorism than Caucasians (Hill & Stuckey, 1993). This difference was even larger for African American women who typically preferred Empiricism as a style. Persons with either dominant Metaphorism, Rationalism, or Empiricism epistemic styles have been shown to prefer Constructivist, Rationalist, and Behavioral counseling approaches, respectively (Lyddon, 1989a). Schadt and Black (1985) administered the PEP to psychoanalytic and behavioral therapists. They found that psychoanalytic therapists tended to prefer a Metaphoric style while behavioral therapists tended to prefer an Empirical style. Metaphorism has also been found to be significantly correlated with analogical reasoning as measured by Raven’s Standard Progressive Matrices (Hill & Stuckey, 1993).

The advent of multivariate statistical design and research methods has highlighted the value of studying and uncovering higher-order factoring; those factors that supersede the most obvious manifestation of the studied object. Epistemology is a domain of study that attempts to understand those crucial higher order factors of personality. Such factors are unique among personality theories as they are based not on behavior but on how the individual interprets the world. Royce and Powell (1983) have provided a useful heuristic for understanding the concept of epistemology as a personal categorization. This theory of epistemic styles has been quantified and measured through Royce and Mos’ (1980) Psychoepistemological Profile (PEP).

Metaphor and Emotion

Emotions have been described as constructions organized by biological, social,
and psychological factors (Greenberg & Safran, 1987). They can be biological adaptations developed out of physiological need. For example, fear prompts humans to escape certain dangerous situations. Other emotions, however, are a combination of biological and social influences (Greenberg, 1997). These emotions are public, communicative, and sharable within society. They frequently influence interpersonal communication such as in expressing how one feels about an object, person, or event. Primarily psychological factors that are both individually variable and idiosyncratic also organize emotions (Lubart & Getz, 1997). These multidimensional emotions “are attached to concepts or images representing objects, people, and events in memory” (Lubart & Getz, 1997, p. 286). In other words, emotions can become fused to a meaningful concept resulting in a connection between cognition and emotion termed an endocept (Lubart & Getz, 1997). An endocept can be activated when a similar emotion-concept connection is made thus providing “an associative bridge between seemingly disparate objects, persons, or events” (Lubart & Getz, 1997, p. 287). This notion suggests that emotion may be instrumental in creating a link between two concepts such as the case in metaphor generation and comprehension (Dent-Read & Szokolszky, 1993; MacCormac, 1986).

Researchers have also found that individuals tend to use more metaphors when either describing intense emotions rather than actions (Fainsilber & Ortony, 1987) or when describing their own emotions rather than others’ (Williams-Whitney, Mio, & Whitney, 1992). Davitz (1969) found that when people are asked to describe emotional
states they often employ metaphorical descriptions. Metaphors have been seen as useful tools for symbolizing emotions (Lyddon, Clay, & Sparks, 2001). An individual’s emotion provides a connection between the inner and outer experience of life. Metaphor may allow a person to represent this connection in a meaningful way (Payne, 1985). For example, Jooste and Cleaver (1992) conducted a case study of three depressed patients in which a metaphor was provided by the therapist involved. At first, the meaning and applicability of the metaphor was not well understood. However, as the patients began to understand the metaphor as it applied to their lives, it became a stimulator for self-awareness that opened new areas of exploration. One patient was presented with the metaphor of HER DEPRESSION IS LIKE CHARCOAL. In this case, the woman became more aware of how her depression affected others by understanding how charcoal blackens everything she touches.

Many researchers have suggested that metaphor is a necessary medium for the expression of emotion (Ortony, 1975; Ortony, Clore, & Collins, 1988). According to researchers, the subjective nature of emotion requires a metaphorical mode of expression in order to meaningfully represent the experience. Other researchers have theorized that this requirement is cognitive as well as linguistic (Lakoff & Johnson, 1988). The tendency to express emotions and perceptual experiences in terms of conventional metaphors has been observed to be a naturally occurring developmental milestone in children (Tolaas, 1994). Incidentally, individuals who experience a clinically significant absence of emotion, such as those with alexithymia, have distinct difficulties utilizing
figurative language and thought, such as metaphor (Taylor & Bagby, 1988; TenHouten, 1994). Individuals with other developmental disorders such as Asperger’s Disorder experience a significant delay in both their ability to express emotion and metaphor appropriately (Volkmar & Klin, 2000). This delay is also evident in their understanding and comprehension of metaphor and emotion. These individuals misread emotion and tend to take metaphors literally suggesting a lack of metaphorical understanding.

Findings from physiological and neurological research also suggest a connection between metaphor and emotions. Individuals with brain lesions or destruction in the frontal lobe who subsequently show emotional problems also have difficulty forming metaphors (Miall, 1987). In his studies of hemispheric specialization, Hoppe (1994) found that affect and the symbolic abilities associated with creativity and metaphor generation existed in conjunction on the right hemisphere of the brain. However, the capabilities to express that emotion verbally were mediated laterally on the left hemisphere. Subsequently, it was found that patients who did not have access to symbolization and imagery of the right hemisphere due to commissurotomy (disconnection of the two brain hemispheres) also experienced “increased inhibition and repression of feelings” (Hoppe, 1994, p. 217; TenHouten, 1994). Watzlawick’s (1978) earlier work concurs with more recent work indicating that metaphor and emotion both predominantly involve right hemispheric processes.

Rogers, TenHouten, Kaplan, & Gardiner (1977) also supported a psychophysical connection between emotion and metaphor while studying Hopi Native American
children. These children were told the same metaphorical story in their native language and English. The EEG results suggested that the story in English required more left brain processing while their native language was more associated with right brain processes. The implication being that their non-native language (English) required more logical processing while their native language was closer to their emotional experience. However, more recent evidence suggests that metaphor processing may actually occur in both the right and left hemispheres and may depend more on the specific task or metaphor being processed (Faust & Weisper, 2000).

Many researchers have examined the relationship between mood and creativity. Most consider metaphor a subset of creativity or in the very least view them as similar processes (Lubart & Getz, 1997; Miall, 1987; Russ, 1993). Anecdotal data examining mood disorders and creativity revealed that creative writers have higher rates of mood disorders with an unusually high rate of bipolar disorder (Andreasen, 1987; Akiskal & Akiskal, 1988; Jamison, 1989; Richards, 1994). Even higher rates (89%) of creative writers were found to experience symptoms of clinical hypomania. These studies also reported that not only did bipolar and cyclothymic individuals score high on measures of creativity, but also their first-degree “normal” relatives scored high as well. The researchers were unable to explain why first degree relatives scored high on measures of creativity. Similar studies reported positive correlation between creativity in college students and “hypomanic personality traits” (Eckblad & Chapman, 1986; Schuldeberg, 1990). Bowden (1994) noted that Randall Jarrell, 20th century poet, would be most
creative during episodes of intense depression or elation. Similar processes were
observed in Hugo Wolf, who would compose two to three musical scores daily during
manic episodes. Schumann and Hector Berlioz are also legendary for their bipolar related
irritability.

Fainsilber and Ortony (1987) studied metaphor production and the influence of
emotional experience. They interviewed participants asking them to describe emotional
events in their lives and specifically to describe how they felt and what they did about it.
The researchers found higher use of metaphor when discussing how they felt than
compared to their actions. The second major finding of the study was that the intensity of
the emotional experience was related to metaphor usage. As the intensity of the
emotional experience increased, the number of metaphors used also increased. Fainsilber
and Ortony also found a small effect for emotional intensity on the type of metaphor used.
More novel metaphors were used to describe more intense emotional experience. In
addition, the data suggested that the use of metaphor also varied according to the different
emotions described. The emotion of relief accordingly produced the greatest number of
metaphors, followed by pride, shame, sadness, fear, happiness, resentment, with gratitude
producing the fewest metaphors.

Emanatian (1995) investigated the metaphoric expression of emotion from a
different perspective. This investigator studied the different ways metaphors are used to
describe bodily felt experiences in different cultures. The study specifically examined a
Bantu dialect spoken in Tanzania and the culture’s usage of eating and heat metaphors to
refer to sexuality and sexual feelings (examples of Chagga eating metaphors are “I’ll descend on her like a feast,” “Does she taste good/sweet?” “If I eat her, I won’t have to eat again.” (p. 168); examples of Chagga heat metaphor are “She roasts,” “She burns,” “She has a heaven of fire,” “Look at that oven.” (Emanatian, 1995, p. 170-171).

Emanatian found that although not as prominent, the English language uses eating and heat metaphors as well. For example, “Paula has an amazing sexual appetite,” “He is a real hunk/piece of meat,” “You look luscious/juicy” (Emanatian, 1995, p. 172-173). Examples of the heat metaphor in the English language are much more prominent with: “So, how long has their steamy love affair been going on?” “I’ve really got the hots for her,” “They were burning with desire,” “She’s frigid” (Emanatian, 1995, p. 173).

Emanation (1995) also found that other cultures preferred using eating metaphors for sex such as the Cuna (Panamanian native culture) and the Mehinaku (Amazonian native culture) as well as cultures that prefer hunting metaphors, a close relative of eating metaphors, such as the Kikuyu, Hua, and Ojibua.

This research adds to Lakoff’s (1987) argument that the physiological or bodily effects of an emotion helps determine the preferred metaphor. For example, Americans refer to anger as pressure and heat such as LETTING OFF STEAM, FUMING, BUSTING A GASKET, HOT UNDER THE GILLS, and BLOWING A FUSE (Lakoff & Johnson, 1980). This metaphor has been observed in other cultures as well (Emanatian, 1995). In this example, the human body temperature increases as one gets angry.

Therefore, the bodily feedback informs the metaphor used. Emanatian (1995) argued that
cross-cultural correspondence of metaphors are found because all humans utilize a similar physiological process that in turn informs metaphorical usage on emotions. For instance, Emanatian's research on sexual feelings and eating, hunting, and heat have certain structural, physiological, and psychological similarities universal to humanity that prompts the preferred metaphors. Kovecses (2000) found similar results in his cross-cultural linguistic analyses of emotional language. He made a similar proposition that cross-cultural universality in metaphorical language exists because there is a universality of biological-physiological processes in the human body and how that body interacts with the external world. As a result, if emotional metaphors are based on bodily-felt experiences, the metaphors will be similar across cultures. Similar findings have been explored for metaphors of the face finding similarities across cultures (Yu, 2001).

Lakoff and Johnson (1980) explored the process of conceptualizing HAPPY IS UP and SADNESS AS DOWN finding that a drooping posture is a common symptom of sadness while an erect posture is commonly associated with positive emotions. Consciousness is up while unconsciousness is down -- humans sleep lying down and stand when awake. Also, Lakoff and Johnson found that "rational" is typically seen as up and "emotional" is seen as down. They further propose that because persons in Western culture tend to view themselves as in control of or above nature, they place a high value on rational thought. Emotions, on the other hand, are often viewed as more primal or natural and, therefore are considered as "lower" in value.
Emotional Expressivity

Emotional expression in its variety of forms plays vital roles in humanity from the individual level to society. In individual adjustment, emotional expression has shown to be necessary for processing of trauma (Scurfield, 1994), adapting to stress (Greenberg, 1997; Greenberg & Safran, 1987), and dealing with grief (Moskowitz, 2001). In psychotherapy, client emotional expression helps the therapist understand how the client is feeling, how he/she is dealing with their feelings, and the quality of the relationship (Watson & Greenberg, 1995). Compelling evidence also reveals strong links between emotion and memory suggesting that the symbolic process involved in developing memory sets is a crucial part of expressing emotion (Philippot & Schaefer, 2001). Abe and Izard (1999) found that emotional expression is strongly associated with personality traits that remained robust over time. In their study, they found qualities of emotional expression to be significantly correlated with Five Factor traits such as Agreeableness and Conscientiousness (for a review of the Five Factor model of personality see McCrae and Costa, 1997). Conceptually, there appears to be evidence that emotion is connected to higher order factors of personality as well. Socially, emotional expression serves to draw humans closer to each other by eliciting supportive responses, indicate relative social status, averting conflict and to communicate boundaries (Bonnano, 2001).

One important role of emotional expression is the regulation of affect; a phenomenon commonly referred to as affect self-regulation or emotion self-regulation (Bonnano, 2001). This regulation is thought to be exhibited in two phases: control of
immediate affect and anticipatory regulation. In regards to control, there is increasing
evidence to suggest that the role of facial muscle movements in emotional expression is
not only important to communication but also to emotional activation and regulation
through the use of facial feedback mechanisms (Izard, 1990). Ekman and Davidson
(1993) found that deliberately performed smiles actually increased regional brain patterns
very similar to the pattern associated with positive emotion. Clinical research and
anecdotal reports also indicate that the facial expression of emotion is critically important
in resolving trauma and unresolved issues (Littrell, 1998). Facial expression, however,
has also been observed to detract from emotional growth with certain difficulties, such as
bereavement and high levels of anxiety (Bonanno & Keltner, 1997).

The process of turning emotion into semantic material has also been found to be a
form of emotional regulation. Empirical evidence suggests that writing in a journal about
traumatic events can help to resolve the distressful emotions and increase long-term
health (Pennebaker, 1989; Pennebaker & Beall, 1986). Pennebaker (1993) explained this
phenomenon by asserting that putting stress and emotion into symbolic terms or words
helped to structure, contain, and ultimately understand and control the emotional state.
Therefore, the symbolic restructuring of the affect is important in the regulation process.
Even further, the semantic containment of emotion suggests a correlative link between
emotion, a basic amygdala driven brain function, and the higher functioning semantic
abilities of the brain. Pennebaker, however, implicated the reduction of inhibition of
stress and emotion to be the most important cause of emotional health in the writing paradigm (Pennebaker, 1993).

Greenberg, Wortman, & Stone (1996) asked two groups to write about traumatic events they both had experienced. One group was instructed to write about their own traumatic event while the other would write about another person's traumatic experience. Both groups had similar positive outcomes in long-term health (i.e., fewer illness visits to physician and fewer self-reported health symptoms). Greenberg et al. explained that putting another person's trauma into words helped them to construct a more complex sense of self; possessing greater resiliency, empathy, and mastery over reactions. From a metaphorical or symbolic sense, even imagining how one would experience a trauma "preforms" the symbolic set necessary for containing and processing emotion.

A number of measures have been created to measure emotional expressivity. The most widely used measure of expressiveness is the Affective Communication Test or ACT developed by Friedman, Prince, Riggio, & DiMatteo (1985). However, this instrument measures more nonverbal communication of emotion and charisma rather than verbal expressivity. In addition, the instrument and construct may overlap significantly with extroversion (Friedman et al., 1980). The Affective Intensity Measure or AIM is another useful and widely researched tool for emotional expressivity (Larsen & Diener, 1987). However, the instrument examines the intensity of felt emotion rather than a general measure of expression. King and Emmons (1990) developed two helpful measures of emotional expressivity. One is called the Emotional Expressiveness
Questionnaire (EEQ) and focuses on actual expressive behaviors. It uses questions such as "I laugh a lot" and "I often touch friends during conversations." In order to better study emotional expressivity, they also developed the Ambivalence Over Emotional Expressiveness Questionnaire (AEQ) which looks at the conflict between desiring to express emotions but holding back. It uses questions such as "I want to tell someone when I love them, but it is difficult to find the right words." Kring, Smith, and Neale (1994) developed an Emotional Expressivity Scale (EES) that measures the outward display of emotion. It contains questions such as "I think of myself as emotionally expressive" and "I can't hide the way I'm feeling." More recently, Gross and John (1995) have developed the Berkeley Expressivity Questionnaire (BEQ). While this measure is similar in function to many instruments, it has excellent psychometric properties. In addition, the BEQ is able to act as a measure of general emotional expressivity and assess more detailed subscales.

Perhaps in the past, humanity would have separated emotion as a purely instinctual response while metaphor would be a higher cognitive thought oriented skill. However, the research reviewed in this section suggests that metaphor and emotion are not only more connected than was previously known, but seem to be intrinsically connected. Metaphor and emotion may not exist without each other. This association can be found in the cross cultural research, psychophysical research, anecdotal evidence, and correlational research. It seems that just as metaphors are important tools for
organizing life experiences, they are also important for organizing and making sense of emotional experience as well.

Integration and Hypotheses

One principle task of humanity is to perceive, predict, and make sense of the world and life experience. As outlined above, some theorists propose that humans use different methods for accomplishing this phenomenological task. For example, it has been suggested that the building of conceptual and cognitive metaphors allows the individual to construct a phenomenology that is not only highly idiographic and adaptable but also shares commonalties with his or her social world. However, while the use of metaphors appears relatively universal, its use may be more prominent among certain individuals. Therefore, it may be important to examine the factors that influence individual differences to better understand the practical implications of metaphor. Personal epistemology, a well-researched construct with an already established connection to metaphorical thinking, seems like an appropriate framework for examining these individual differences more closely.

Given this expanse of literature, the present research project was designed to examine how these models of cognition (root metaphor theory, psycho-epistemological theory, and emotional expression) express themselves through metaphor. More specifically, this study investigated how a person's psycho-epistemological profile and ability to express emotions impacts the type and number of metaphors he or she produce. The metaphors are judged according to their formistic, mechanistic, contextualistic, and
organismic qualities. In essence, this study investigated the relationship between a person’s metaphors produced and structures of root metaphors.

First, it is predicted that persons with a dominant metaphorical epistemological style will tend to use a higher number of metaphors in their language when compared to those who are dominant in either Rationalism or Empiricism. Theoretically, those who dominate in metaphorism will tend to validate reality in terms of symbolism; taking one experience or concept and applying it to a novel event.

In addition, it is proposed that a potential crossover between Personal Epistemology and Pepper’s (1942) root metaphor theory exists, since both are cognitive models that describe the interpretation of reality. Therefore, a second hypothesis is that those individuals with a metaphoric style will use metaphors that are more contextually and organically based. The definitions of metaphorism, contextualism, and organicism share similarities and therefore should share a certain amount of parity between the styles. Likewise, rationalism and formism share similarities and therefore a third hypothesis is that those using a rationalistic style will utilize metaphors that are formistic or trait based. Likewise, a fourth hypothesis is that those using an empirical style will utilize metaphors that are mechanistic in nature.

As outlined above, emotion and language seem to have a fraternal connection with each other. This relationship may be even more salient between emotion and metaphor. In many ways, emotion, like metaphor, is a way of understanding the world. Therefore, it only seems fitting to study metaphor in the context of emotion. Emotional
expressivity is a usefully operationalized subcategory of emotion. As discussed previously, emotion seems to be a necessary part of expressing metaphor and vice versa. Thus, a fifth hypothesis is that individuals with a high level of emotional expressivity will also tend to use more metaphor to describe their experience. This is not proposed to be a causal relationship but a parallel relationship in which both metaphor and emotion influence the production of each other.
CHAPTER II

METHODS

Participants

A power analysis indicated that in order to achieve adequate power in this design, the analysis required approximately 200 participants. Undergraduate students enrolled in an introductory psychology course at The University of Southern Mississippi were asked to participate in the study. Permission to use this sample was given from The University of Southern Mississippi Human Subjects Review Board (See Appendix P). Participation in the study involved extra credit in some classes and class credit in other classes. In classes where no incentive was offered, a drawing for a small gift certificate was provided. A total of 207 participant surveys were gathered during the course of this experiment. Of the participants that were administered the instruments, 22.7 percent were male, 76.8 percent female, 47.8 percent Caucasian, 46.9 percent African American, 1.4 percent Hispanic, 1.4 percent Asian, and 1.4 percent mixed race. These participants were solicited through an introductory psychology course website that allowed students enrolled in the course to sign up for experiments and receive credit for participation. The surveys required approximately 45 minutes to one hour to be completed and were collected in a university classroom.

Instruments

*The Organicism-Mechanism Paradigm Inventory.* (See Appendix A)
The Organicism-Mechanism Paradigm Inventory (OMPI) is a 26-item forced choice instrument based on Pepper's (1942) root metaphor theory that is designed to measure individual proclivity toward either the mechanistic or organismic worldviews (Germer et al., 1982). One major difference between the OMPI and the original World Hypothesis Scale is that the OMPI measures only two out of the four root metaphors. This is due to the overt similarities between formism and mechanism (both being analytic worldviews) and the similarities between contextualism and organicism (both being synthetic worldviews). In addition, validity research has found strong correlations between organicism on the OMPI and organicism and contextualism on the WHS (Johnson et al., 1988).

The items of the OMPI were developed out of seven theoretical categories (ontology, epistemology, image of man, analysis and causality, change, dynamics, and methodology) and ten practical categories. The practical categories were chosen to correspond to the psychosocial stressors found in the *Diagnostic and Statistical Manual of Mental Disorders, Third Edition* (1980): conjugal, other interpersonal, parenting, occupational, living circumstances, financial, legal, developmental, physical illness or injury, and family factors. While the content of the items came from these psychosocial sources, the discrimination between mechanistic and organismic items were based purely on theoretical principles. The original pool consisted of 120 items that were subsequently cut down to 26 (13 theoretical items and 13 practical items) through expert panel judgment and item-total score correlations. The final instrument yields a score between
0-26, with low scores an indication of a tendency towards a mechanistic worldview and high scores a tendency towards an organismic worldview.

Good reliability and internal consistency were obtained through test-retest (correlation of .77), Guttman split-half internal consistency (.86), Spearman-Brown internal consistency (.86), and Cronbach’s alpha (.76) on the OMPI. Construct validity was demonstrated throughout the test development and in two subsequent studies correlating the OMPI with a number of personality measures (see Johnson, 1984 and Johnson et al., 1988). To summarize these findings, it can be said that the mechanistic and organismic paradigms can be discriminated on philosophical and theoretical dimensions in addition to socioeconomic and demographic dynamics. Personality traits, intellectual factors, and vocational interests can discriminate the worldviews as well. The OMPI has shown a great deal of statistically significant correlations with these discriminating factors suggesting that the instrument measures what it is designed to measure. In addition, no one variable was discovered to account for more than 12% of the variance. These data suggests that the OMPI has wide breadth and measures a new construct that is not being measured through another instrument.

_Psycho-Epistemological Profile_ (See Appendix C)

The Psycho-Epistemological Profile (PEP) is a 90-item 5-choice Likert-type scaled instrument developed by Royce and Mos (1980). The instrument measures three epistemological dimensions (epistemic styles): Metaphorism, Empiricism, and Rationalism. The PEP yields a score for each style providing comparative t-scores.
Through the application of decision rules, a dominant style can be produced. The PEP has been revised six times to its present use since its inception. The PEP was normed on a college population of 925 males and 417 females between the ages of 19-24. Concurrent validity was demonstrated through theoretically consistent correlation between reported epistemological preferences and professional career choices, college majors, and interest areas. For example, performing arts professionals were more likely to prefer metaphorism as a dominant style, mathematics and theoretical physics professionals preferred rationalism, while chemists and biologists subscribed to the empirical epistemology. The PEP was also shown to correspond theoretically with the MBTI and the Allport-Vernon-Lindzey Study of Values. Similar results were found when the PEP was correlated with the Strong Vocational Interest Blank and the Theoretical Orientation Survey (Royce & Mos, 1980).

Each dimension of the PEP correlated positively with the total score establishing adequate internal consistency. Split-half reliability yielded correlations ranging from .75-.88; another indicator that the PEP is internally consistent (Royce & Mos, 1980). Test-Retest reliability is moderate, yielding coefficients ranging from .61-.87. Intercorrelations between the three dimensions are in the modest range (.51-.63) suggesting relative dependence and yet meaningfulness in isolation as well. Factor analysis corroborates the presence of three factors corresponding to the three theoretical constructs (Royce & Mos, 1980).

Berkeley Expressivity Questionnaire (BEQ). (See Appendix B)
The BEQ was developed by Gross and John (1995) as a brief (16-item) measure of "emotional expressivity," conceptualized as an enduring human trait. The BEQ's format utilizes Likert-type responding ranging from "Strongly Disagree" (1) to "Strongly Agree" (7). The instrument measures two aspects of emotional expressivity: "the strength of the individual's emotional response tendencies, and the degree to which these emotional impulses are expressed as overt expressive behavior" (Gross and John, 1995, p.556). The BEQ has three dimensions: impulse strength, negative expressivity, and positive expressivity. Impulse strength refers to the strength of the subjectively experienced emotion. Statements that loaded on this factor were "I have strong emotions," and "I experience my emotions very strongly." The second factor, negative expressivity, is concerned with the extent to which the individual expresses outwardly negative (sadness, anger, fear, etc.) emotions. The third focuses on positive emotional expression (happiness, laughter, etc.). The instrument can be used to examine the individual factors separately or as one single factor aptly named General Expressivity. For the purposes of this study, the overall expressivity score will be used.

The BEQ was normed on 470 undergraduate students in psychology (Gross & John, 1995). The BEQ shows significantly good inter-item correlations with a total coefficient of .85. Each of the three subscales has moderate correlations with each other (.50 to .52) and each had a theoretically consistent factor structure. In addition, the general expressivity factor accounted for an impressive 31 % of the variance. Test-Retest reliability was conducted on a subsample of 68 participants and yielded a .86 reliability.
coefficient for the overall instrument. Adequate construct validity was achieved by showing theoretically appropriate correlation with ethnicity, gender, political orientation, and positive and negative reported mood. In terms of convergent validity, the BEQ was negatively correlated with Watson and Greer’s (1983) emotional control scale. Last, the BEQ was found to be theoretically consistent with aspects of the Five Factor Theory. The Total Expressivity Scale showed strong correlation with Neuroticism and Extroversion.

Procedures and Data Organization

The participants were first asked to think about three emotionally significant events from their past and then record their responses (See Narrative Response Form, Appendix G) consistent with the following instructions:

Please tell me about one event or situation in your past that you believe was especially significant and that still may affect you today. It can be about people, places, events; anything that you feel is significant to you. Write the situation on the next page and try to be as descriptive as possible. Especially describe your feelings and emotions regarding the event both at the time and now.

After all participants had completed the exercise, they were asked to generate three emotionally relevant events regarding the present following these instructions:

Please tell me about an event or situation that is occurring in your present that you believe is especially significant and affects you greatly. It can be about people, places, events; anything that you feel is significant to you. Write the situation in
the on the next page and try to be as descriptive as possible. Especially describe your feelings and emotions regarding the event.

Following the completion of the second exercise, the participant’s were asked to generate three emotionally relevant events they are anticipating about the future following these instructions:

Please tell me about an event or situation that you anticipate to occur in the future that you believe will be especially significant in your life. It can be about people, places, events, anything that you feel will be significant to you. Write the situation on the next page provided and try to be as descriptive as possible. Especially describe your feelings and emotions that you anticipate you will feel as well as the feelings you have currently.

Following the completion of the third exercise, the participant’s completed the following questionnaires in this order: OMPI (Appendix A), PEP (Appendix C), and BEQ (Appendix B).

The narrative exercises the participant’s completed was an adaptation of the instructions given for the Self-Confrontation Method developed by Hubert Hermans (1987a, 1987b, 1988, & 1995). While the instructions had been altered to elicit an emotional response and to fit the specific exercise, the procedure is the same in that the participant created the data to be investigated. This was implemented in this study in order to control for emotional valence to the individual.
Following the collection of the data, the instruments were scored and participant narratives were examined for the presence of metaphors. Each metaphorical phrase was removed from the narratives and placed on a rating sheet. The narratives were examined by the chief investigator. However, a small sample (5-10%) of the narratives was re-examined by another investigator familiar with the nature of this study. This re-examination was performed without knowledge of the initial examination results. This was done in order to make sure that the chief investigator was not skewing the results of the narrative examination. In order to detect a potential metaphor from the narrative, the following definition was used.

Metaphor is a figure of speech in which a word or phrase that ordinarily designates one thing is used to designate another, thus making an implicit comparison. For the purposes of gathering metaphors, only active or distinctly explicit metaphors will be used. Dead metaphors, or metaphors that the connection is implied and hidden rather than actively visualized, will not be counted as metaphors; dead metaphors are also commonly a part of our language.

For example, to “grasp a concept,” “the leg of a table,” “to gather you’ve understood,” and “to give of yourself” are dead metaphors. Active metaphors are “you are my sunshine,” “you fill me with living water,” “it looked like a tornado moved through the house,” and “this lights a fire under my pants”.

A small pilot study of nine participants was performed in order to assess how many metaphors were produced by the narrative exercise and how much time was
required to complete the exercise. Initially, three participants were administered the full Metaphor Elicitation Procedure, each being asked to write three events for the past, present, and future. Of the three participants, an average of 12.33 metaphors was produced by each participant with a range of 12 metaphors to 13 total metaphors. However, the average amount of time required was 78 minutes with a range of 55 minutes to 120 minutes. This amount of time would be extremely cumbersome to collect in a group setting. Therefore, a second group of 5 participants were asked to complete the Metaphor Elicitation Procedure providing only one event for past, present, and future. The average number of total metaphors provided was 5.8 with a range of 1 to 7. The average amount of time for this group was 24 minutes. Because the second group provided adequate metaphors but in a fraction of the time, the Metaphor Elicitation Procedure used in this study only asked participants to elicit one event for the past, present, and future.

A panel of three therapists (2 licensed psychologists and one licensed master’s level therapist), who were blind to the design and intent of the study, were trained in the four types of worldviews presented by Stephen Pepper (1942) and outlined in this paper (Formism, Mechanism, Contextualism, and Organicism). For example, the more specific metaphorical phrase of *Marriage is like a growing garden* might best be classified as an organismic worldview. Each therapist rated (Likert-type scale ranging from 1 to 7) each metaphorical phrase in relation to each metaphor, with the goal of identifying the worldview/root metaphor(s) that represent the best “fit” for the phrase (See Root
Metaphor Rating Form, Appendix F). Consequently, each metaphor had four scores: one each for Formism, Mechanism, Contextualism, and Organicism.

The metaphor rating panel training was derived from Pepper's (1942) original work as well as other relevant research related to root metaphor theory. The training was given in a workshop format by the primary investigator and followed the description presented in Appendix J. A summary chart was provided to the members of the panel to be used as a reminder during the rating period (See Appendix K). Following the training, each member of the panel was administered the Readiness Test Form A (See Appendix L) in order to evaluate the effectiveness of the training. Each member needed to correctly answer 90% of the questions to qualify to proceed to the rating phase. The readiness test has been adapted from the World Hypothesis Scale (WHS; Harris, Fontana, & Dowds, 1977). Essentially the panel was asked to identify the worldview/root metaphor matches each item on the readiness test. Each member of the panel was a licensed therapist or psychologist of some kind in the mental health field.

During the metaphor rating task, only half of the metaphors were provided to each member of the rating panel. Embedded into the first half was a "fake" metaphor; this means that the metaphor was already established as a particular root metaphor. The metaphor came from a WHS item. If the metaphor was correctly matched with it's preset root metaphor, then the second half of the metaphors was be given. If the metaphor was not correctly matched, then another training workshop was to be provided. The second workshop was to be evaluated by Readiness Test Form B (See Appendix M). Note that
the PEP, BEQ, and OMPI were scored after the metaphors were collected from the narratives.

Design and Analysis

The analysis and model of this project was primarily a quantitative design utilizing the canonical correlation statistical method. All measures (independent and dependent) involved continuous data. Some measures had more than one variable associated with them. For example, the PEP has three variables: RATIONALISM, EMPIRICISM, and METAPHORISM. The Root Metaphor Rating task (complexity of metaphor) has four variables: FORMISM, MECHANISM, CONTEXTUALISM, and ORGANICISM. While the OMPI and BEQ each have only one variable: WORLDVIEW ORIENTATION and EMOTIONAL EXPRESSIVITY, respectively. Finally, the number of metaphorical phrases generated will comprise one variable: TOTAL NUMBER OF METAPHORS. All ten variables were analyzed utilizing a Canonical Correlational Analysis designed to test for linear relationships between the five independent variables (RATIONALISM, EMPIRICISM, METAPHORISM, WORLDVIEW ORIENTATION, EMOTIONAL EXPRESSIVITY) and the five dependent variables (FORMISM, MECHANISM, CONTEXTUALISM, ORGANICISM, TOTAL NUMBER OF METAPHORS) (See Table 3).
Table 3
Canonical Correlation Variables

<table>
<thead>
<tr>
<th>INDEPENDENT VARIABLES</th>
<th>DEPENDENT VARIABLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>WORLDVIEW ORIENTATION (OMPI)</td>
<td>FORMISM (Panel Rating)</td>
</tr>
<tr>
<td>EMPIRICISM (PEP)</td>
<td>MECHANISM (Panel Rating)</td>
</tr>
<tr>
<td>METAPHORISM (PEP)</td>
<td>CONTEXTUALISM (Panel Rating)</td>
</tr>
<tr>
<td>RATIONALISM (PEP)</td>
<td>ORGANICISM (Panel Rating)</td>
</tr>
<tr>
<td>EMOTIONAL EXPRESSIVITY (BEQ)</td>
<td>TOTAL # OF METAPHORS</td>
</tr>
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</table>
CHAPTER III

RESULTS

Table 4 shows the descriptive statistics for each instrument used. The mean age for the participants was 20 years old and the ages ranged from 18 to 36; this was about average for a standard undergraduate college sample. The mean score for the OMPI was 14.81 and the range is 7 to 24. The possible range for this instrument is from 0 to 27. According to past research using the OMPI to investigate student perspectives, the mean score of 14.81 is slightly weighted toward the Mechanistic perspective (Johnson et al., 1988). The possible range for the BEQ is from 16 to 112. On this particular sample, the BEQ scores ranged from 34-112 reflecting a generally higher tendency towards emotional expression. The PEP scores each have a potential range of 30 to 150. The ranges and means for each dimension of the PEP are typical for what has been found in previous research with this instrument (Royce and Mos, 1980). The total number of metaphors provided by each participant ranged from 0 (those who did not provide a metaphor) to 11 (the maximum number provided). The mean number of metaphors was 1.64. Notice that each of the standard deviations were fairly small when compared to the means of each scale with the exception of the four panel rating scores (5.17, 5.37, 4.02, and 3.34 for Formism, Mechanism, Organicism, and Contextualism respectively). This is an indicator that these scores were not normally distributed and skewed toward zero. This is because 59 participants did not produce any metaphors (making their scores zero).
The metaphor rating panel rated a total of 310 metaphors from 148 participants; 59 participants did not use any metaphors. Each metaphor rating panel member passed the initial training readiness test and passed the embedded "fake" metaphor test. A large variety of metaphors were used by the participants; here are a few of the examples: "It seemed like a dream," "...the battle with cancer," "...remain lost in this labyrinth of loneliness," "draw me out of the grotto of sadness," "play games of what-if," "...have been breaking my neck for her," "stuck to me like glue," "I feel like it will be the beginning of my life."

Table 4

Descriptive Statistics

<table>
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<tr>
<th></th>
<th>Range</th>
<th>Mean</th>
<th>SD</th>
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<tr>
<td>Age</td>
<td>18-36</td>
<td>20.20</td>
<td>2.11</td>
</tr>
<tr>
<td>OMPI</td>
<td>7-24</td>
<td>14.81</td>
<td>3.22</td>
</tr>
<tr>
<td>BEQ</td>
<td>34-112</td>
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<tr>
<td>Metaphorism</td>
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<tr>
<td>Rationalism</td>
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<tr>
<td>Empiricism</td>
<td>76-135</td>
<td>101.45</td>
<td>10.97</td>
</tr>
<tr>
<td>Total # of Metaphors</td>
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<td>1.64</td>
<td>1.68</td>
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<tr>
<td>Formism</td>
<td>0-22</td>
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<td>5.17</td>
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<tr>
<td>Mechanism</td>
<td>0-21</td>
<td>6.20</td>
<td>5.37</td>
</tr>
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</table>
A canonical correlation multivariate analysis of variance (MANOVA) was used to analyze the 10 variables of interest; OMPI, PEP: Metaphorism, PEP: Rationalism, PEP: Empiricism, and BEQ (Set 2) were the independent variables or "covariates" while Formism, Mechanism, Contextualism, Organicism, and the total number of metaphors (Set 1) used were the dependent variables. The Wilk's Lambda analysis indicated that only the first of five canonicals was statistically significant \( p < .05 \), with a canonical correlation loading of .328. For the purposes of this analysis, therefore, only the first set of canonical correlations can be examined.

The correlations within set 1 contained several coefficients in the moderate range of strength (See Table 5). This indicates a fair amount of internal stability as a group. The highest correlation was between Contextualism and Organicism (correlation coefficient = 0.7139). The correlations within set 2 were somewhat lower on average with only three correlations in the moderate range (See Table 6). The three strongest correlations were between the three scores of the PEP indicating good internal
consistency for that instrument. The correlations between set 1 and set 2 were very low and none of the correlations were at a moderate level (See Table 7).

Table 5

Correlations Within Set 1

<table>
<thead>
<tr>
<th>Variables</th>
<th>Total</th>
<th>Formism</th>
<th>Mechanism</th>
<th>Contextualism</th>
<th>Organicism</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Metaphors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Metaphors</td>
<td>1.0000</td>
<td>.4376 **</td>
<td>.4672 **</td>
<td>.4713 **</td>
<td>.4350 **</td>
</tr>
<tr>
<td>Formism</td>
<td>.4376 **</td>
<td>1.0000</td>
<td>.2887 **</td>
<td>.3908 **</td>
<td>.3906 **</td>
</tr>
<tr>
<td>Mechanism</td>
<td>.4672 **</td>
<td>.2887 **</td>
<td>1.0000</td>
<td>.4223 **</td>
<td>.3437 **</td>
</tr>
<tr>
<td>Contextualism</td>
<td>.4713 **</td>
<td>.3908 **</td>
<td>.4223 **</td>
<td>1.0000</td>
<td>.7139 **</td>
</tr>
<tr>
<td>Organicism</td>
<td>.4350 **</td>
<td>.3906 **</td>
<td>.3437 **</td>
<td>.7139 **</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level.

** Correlation is significant at the 0.01 level.
Table 6
Correlations Within Set 2

<table>
<thead>
<tr>
<th>Variables</th>
<th>OMPI</th>
<th>BEQ</th>
<th>Metaphorism</th>
<th>Rationalism</th>
<th>Empiricism</th>
</tr>
</thead>
<tbody>
<tr>
<td>OMPI</td>
<td>1.0000</td>
<td>.0776</td>
<td>.3665 **</td>
<td>.1658 *</td>
<td>.0586</td>
</tr>
<tr>
<td>BEQ</td>
<td>.0776</td>
<td>1.0000</td>
<td>.2822 **</td>
<td>.1539 *</td>
<td>.1437 *</td>
</tr>
<tr>
<td>PEP</td>
<td>.3665 **</td>
<td>.2822 **</td>
<td>1.0000</td>
<td>.5850 **</td>
<td>.6137 **</td>
</tr>
</tbody>
</table>

Metaphorism

| PEP       | .1658 * | .1536 * | .5850 ** | 1.0000 | .6234 ** |

Rationalism

| PEP       | .0586 | .1437 * | .6137 ** | .6234 ** | 1.0000 |

Empiricism

* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

Table 7
Correlations Between Set 1 and Set 2

<table>
<thead>
<tr>
<th>Variables</th>
<th>OMPI</th>
<th>BEQ</th>
<th>Metaphorism</th>
<th>Rationalism</th>
<th>Empiricism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Metaphors</td>
<td>.1692 *</td>
<td>.0486</td>
<td>.1658 *</td>
<td>.1036</td>
<td>.1724 *</td>
</tr>
<tr>
<td>Formism</td>
<td>.0123</td>
<td>.0695</td>
<td>.0464</td>
<td>.0292</td>
<td>.1406 *</td>
</tr>
<tr>
<td>Mechanism</td>
<td>.2250 *</td>
<td>-.0257</td>
<td>.1734 *</td>
<td>.1308</td>
<td>.1693 *</td>
</tr>
</tbody>
</table>

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In spite of the marginal correlations, every hypothesis was supported based on these results. To be more precise, Metaphorism and the total number of metaphors were positively correlated as predicted (correlation coefficient = .1658). Metaphorism was also positively correlated with Contextualism and Organicism (correlation coefficients = .1125 and .0848 respectively). Likewise, Rationalism was positively correlated with Formism (correlation coefficients = .0292) and Empiricism was positively correlated with Mechanism (correlation coefficients = .1693). Lastly, Emotional Expressivity (BEQ) was positively correlated with the total number of metaphors used (correlation coefficients = .0486). While each of these correlations were theoretically predicted, the coefficients are very small and some were marginally significant.

Within this first canonical, the covariates were found to explain 4.2 % (Set 1 redundancy = .042) of the variance within the total number of metaphors used and the rating scales (Formism, Mechanism, Contextualism, and Organicism). Conversely, the total number of metaphors and the rating scales accounted for 2.9 % (Set 2 redundancy =
.029) of the variance in independent variables. Table 5 lists the canonical loadings and coefficients. The correlation coefficients between set 1 and set 2 are listed in Table 6 for the purposes of understanding the individual relationships between each variable. Note that there were primarily positively correlated relationships. The two exceptions were the BEQ - Mechanism and PEP Rationalism – Organicism relationships which were both inversely related.

Table 8

Canonical Loadings and Coefficients

<table>
<thead>
<tr>
<th>Variable</th>
<th>Loadings</th>
<th>Canonical Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>TotMetaphors (Total # of Metaphors)</td>
<td>-.617</td>
<td>-.259</td>
</tr>
<tr>
<td>Formism</td>
<td>-.105</td>
<td>.396</td>
</tr>
<tr>
<td>Mechanism</td>
<td>-.802</td>
<td>-.553</td>
</tr>
<tr>
<td>Contextualism</td>
<td>-.769</td>
<td>-.531</td>
</tr>
<tr>
<td>Organicism</td>
<td>-.579</td>
<td>-.052</td>
</tr>
</tbody>
</table>

Proportion Variance (Set 1 – Covariates) .392
Redundancy (Set 1 – Covariates) .042
There were 59 participants that did not provide any metaphors during the metaphor elicitation procedure. Because these missing data may have reduced the statistical relevance of the canonical correlation, the data for these participants were removed and a new canonical correlation was conducted only on those participants who provided at least one metaphor ($N = 148$). In addition, a multiple regression between the

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standard Loadings</th>
<th>Canonical Loadings</th>
<th>Canonical Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>OMPI</td>
<td>-.944</td>
<td>-.878</td>
<td>.328</td>
</tr>
<tr>
<td>BEQ</td>
<td>.037</td>
<td>.184</td>
<td></td>
</tr>
<tr>
<td>Metaphorism (PEP)</td>
<td>-.564</td>
<td>-.238</td>
<td></td>
</tr>
<tr>
<td>Rationalism (PEP)</td>
<td>-.265</td>
<td>.120</td>
<td></td>
</tr>
<tr>
<td>Empiricism (PEP)</td>
<td>-.301</td>
<td>-.205</td>
<td></td>
</tr>
<tr>
<td>Proportion Variance (Set 2 - Dependent)</td>
<td>.274</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redundancy (Set 2 - Dependent)</td>
<td>.029</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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total number of metaphors and the dependent measures was performed in order to understand the nature of the number of metaphors on the results. However, the second canonical correlation provided similar results to the first analysis with only minimal change in the coefficients and no significant change in the variance explained (See Table 9). The multiple regression, however, indicated a statically significant relationship between the OMPI and the total number of metaphors used ($t = 2.071, p = .040$).

Table 9
Canonical Loadings and Coefficients for Metaphor Only Sample

<table>
<thead>
<tr>
<th>Variable</th>
<th>Loadings</th>
<th>Canonical Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>TotMetaphors (Total # of Metaphors)</td>
<td>.162</td>
<td>.143</td>
</tr>
<tr>
<td>Formism</td>
<td>.322</td>
<td>-.711</td>
</tr>
<tr>
<td>Mechanism</td>
<td>.105</td>
<td>-.927</td>
</tr>
<tr>
<td>Contextualism</td>
<td>-.716</td>
<td>-1.005</td>
</tr>
<tr>
<td>Organicism</td>
<td>-.678</td>
<td>-.862</td>
</tr>
<tr>
<td>Proportion Variance (Set 1 - Covariates)</td>
<td>.222</td>
<td></td>
</tr>
<tr>
<td>Redundancy (Set 1 - Covariates)</td>
<td>.032</td>
<td></td>
</tr>
</tbody>
</table>
Table 9 (cont.)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Loadings</th>
<th>Standard</th>
<th>Canonical</th>
</tr>
</thead>
<tbody>
<tr>
<td>OMPI</td>
<td>-.368</td>
<td>-.354</td>
<td></td>
</tr>
<tr>
<td>BEQ</td>
<td>.042</td>
<td>-.024</td>
<td></td>
</tr>
<tr>
<td>Metaphorism (PEP)</td>
<td>.264</td>
<td>-.316</td>
<td></td>
</tr>
<tr>
<td>Rationalism (PEP)</td>
<td>.638</td>
<td>.387</td>
<td></td>
</tr>
<tr>
<td>empiricism (PEP)</td>
<td>.881</td>
<td>.803</td>
<td></td>
</tr>
</tbody>
</table>

Proportion Variance (Set 2 – Dependent) .278
Redundancy (Set 2 – Dependent) .040

Canonical Correlation .381

Following the primary analyses of data, a number of post-hoc analyses were conducted for the purpose of theoretically understanding the findings. First, a MANOVA was conducted with gender and race as independent variables and total metaphors, formism, mechanism, contextualism, and organicism as the dependent variables. The MANOVA did not yield any significant results. Next, an ANOVA testing for differences in the variables (age, OMP, BEQ, PEP for Metaphor, PEP for Rationalism, and PEP
for Empiricism) between those participants who provided metaphors and those who did not was conducted.

Those who used metaphors differed significantly on three of the instruments (see Table 10). First, those who used metaphors scored significantly greater on the OMPI than those who did not use metaphors. This result suggests that those scored higher in organicism tended to speak more metaphorically. A finding that is consistent with the theory of the OMPI - those who score higher on the OMPI are more creative in their thinking (Johnson et al., 1988). Second, those who used metaphor significantly scored higher on the Metaphorism subscale of the PEP. This is also consistent with the theory of the instrument. Lastly, those who used metaphors in their responses scored significantly higher on the Empiricism subscale of the PEP.
Table 10

Differences Between Participants Who Used Metaphors and Those Who Did Not

<table>
<thead>
<tr>
<th>Variable</th>
<th>Metaphor Usage</th>
<th>No Metaphor Usage</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>20.25</td>
<td>20.10</td>
<td>0.65</td>
</tr>
<tr>
<td>OMPI</td>
<td>15.25</td>
<td>13.69</td>
<td>0.002 **</td>
</tr>
<tr>
<td>BEQ</td>
<td>75.12</td>
<td>74.22</td>
<td>0.683</td>
</tr>
<tr>
<td>Metaphorism</td>
<td>102.00</td>
<td>97.18</td>
<td>0.016 *</td>
</tr>
<tr>
<td>Rationalism</td>
<td>105.09</td>
<td>102.66</td>
<td>0.217</td>
</tr>
<tr>
<td>Empiricism</td>
<td>102.68</td>
<td>98.38</td>
<td>0.011 *</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level.

** Correlation is significant at the 0.01 level.
CHAPTER IV
DISCUSSION

This project was designed to investigate what variables contribute to the individual differences in the usage of metaphor both in quantity and type of metaphor. Given that metaphor is a viable way of organizing thought, five organizing constructs were chosen as possible influencers of metaphor usage: root metaphor worldview, metaphorism epistemology, rationalism epistemology, empiricism epistemology, and emotional expressivity. In order to investigate metaphor quality, this study used trained raters to evaluate each metaphor generated by participants describing significant events in their lives. The metaphors were evaluated according to their relative correspondence to four root metaphors: formism, mechanism, contextualism, and organicism.

The results of the canonical correlation revealed that the independent variables as a group significantly account for about 4% of the variation in metaphor usage. In other words, approximately 4% of the number and type of metaphors that an individual prefers to use is explained by several key aspects of his or her world hypothesis, psychoepistemological preference, and expression of emotion. Furthermore, the type and number of metaphors that an individual utilizes explained about 2% of those same variables. While these findings are small, they do suggest that the metaphoric expression of emotion is critically connected to the way humans organize experience. In other words, individuals use metaphor to organize their emotional experience. The standard correlation coefficients indicate that all of the relationships were positive relationships.
except for two relationships which were inverse: the relationship between the BEQ and Mechanism and the relationship between Rationalism and Mechanism.

These findings offer several critical implications to the development of metaphoric theory. First, this research establishes some basic similarities between metaphor and other established theories of organizing mental frameworks. This suggests that certain comparisons can be drawn between the two sets of literature in terms of mental models. For example, it has been established that psychoepistemological profiles are useful in career planning and guidance. Therefore, it can also be assumed that metaphoric expression may have some extensions into career planning. Second, this research supports the strong theory of metaphor. As previously discussed, the strong theory proposes that metaphor is a framework of thought rather than just an expression of speech. According to these results, metaphoric expression is an organizing framework for understanding and making sense of emotion. Third, the type and amount of metaphor that individuals use is influenced by how they view and interact with the world. The use of metaphor is influenced by more than creativity, language background, and choice of descriptive words; it is influenced by issues such as worldview, emotional expression and processing, and individual differences in epistemology.

The fourth important finding for theory is actually based on the inverse relationships that were found. Worldview, emotional expression, and epistemological preference were found to be influenced by metaphoric expression itself. This means that not only did worldview influence metaphor but that metaphor influenced worldview.
This suggests that metaphor is not only an organizing framework but also that metaphor is an influencer of other frameworks and other forms of thought and understanding. This is a cutting edge perspective on metaphor – that metaphor can actually provide a feedback of sorts on the individual and then in turn may change and reorganize the individual’s perspective on self and the world. This supports the counseling practice literature on metaphor and its powerful ability to affect a person’s thought processes and make second order (deeper level) change (Lyddon, Clay, & Sparks, 2001). Henceforth, these data support the clinical practice literature by demonstrating the impact of emotional metaphor on worldview and emotional expression.

In light of clinical practice literature for metaphor, this research supports the reason for the use of metaphor in treatment as an effective tool for understanding the fundamental way in which a person understands the world and his or her experience. As previously discussed in the literature review, understanding the individual in terms of mental frameworks is critical in working towards second order change within treatment. Therefore, listening to the metaphors a person uses can be a very helpful method of working therapeutically.

In addition to the above significant results, there was both support for and problems with the methods employed in this project. One positive development involved the Metaphor Elicitation Procedure. The method by which metaphors were generated (the use of a modified Self-Confrontation Method) proved to be a quick, helpful strategy for collecting emotionally meaningful metaphoric material. This method was more
efficient than previously used methods, and the data could be collected in large groups often in a relatively short time period. Previous methods depended upon interview techniques which are extremely cumbersome when it comes to time and labor needed. The majority of participants provided extremely deep and significant material especially in the past narrative and to a lesser extent in the present and future narratives. In light of this finding, future researchers might modify the procedure to only include past narratives.

By the way of contrast, three major methodological problems with this project may have limited the statistical strength of the results. First, defining and identifying the metaphors when embedded in the narrative context proved much more difficult than originally anticipated. Two kinds of metaphors, dead metaphors and implied metaphors seemed to present the most difficulty. An old metaphor is one that has become solidified in our everyday language. Some would argue that old metaphors are still considered metaphors, but this was a difficult decision to make during the metaphor identification process. This was, in part, dealt with by using a second person to double check the metaphors that were chosen. However, determining what metaphor is “too dead” proved difficult for both identifiers. For example, is “losing your best friend” too old of a metaphor? Is the person utilizing metaphoric language or simply socially acceptable language? An implied metaphor is one in which metaphoric language is obviously being used, but it is not clear what metaphor one is using. For example, “my soul is being crushed” implies that some object is crushing his or her soul, but it is not clear what
object is doing the crushing. Implied metaphors presented a problem for the raters in their attempt to determine the root metaphor origins of such metaphors. In examining the three ratings, the more implied the metaphor, the more difficult to obtain inter-rater consistency. This suggests lack of clarity about the true nature of the metaphor.

The second major methodological problem with the project relied on the metaphor rating process itself. While the raters were well trained and were able to pass the readiness test, the process may have been too subjective and dependent upon the specific, unique interpretation of the metaphor intent made by the raters. In other words, each rater had to understand the context of what the participant was expressing in order to accurately be able to rate the metaphor on the four dimensions. The primary researcher attempted to address this issue by providing each rater the contextual statements surrounding each metaphor. For example, rather than just giving each rater the metaphor of “labyrinth of loneliness” they were given “I could not get out of this labyrinth of loneliness I am trapped in.” However, even this semantic context did not seem to facilitate agreement and reduce the inconsistency among the raters.

In interviewing the raters following the rating process, the primary researcher found that two factors seemed to play a large role in this inconsistency. First, the raters needed more context than the sentence in which the metaphor was embedded. The raters struggled to understand the full meaning of the metaphor to be able to discern what particular world hypothesis might be indicated by the metaphor. In other words, one single metaphor could have drastically different meanings depending upon the overall
context of what the participant was conveying. The raters believed that knowing this context was crucial in being able to better rate the metaphor on the four worldview dimensions. For example, the metaphor of “being trapped in a cage of despair” could be formalistic if describing a characteristic of themselves, mechanistic if describing a response to another person in their life, contextualistic if describing an event in their life created by a series of situations, or organismic if describing the next stage in their life’s growth cycle. The context appears to matter when rating the metaphors, but requiring the raters to read every narrative in its entirety would be too laborious given the raters had to rate 310 metaphors. The second factor that was found to be affecting the raters’ consistency was the worldview itself. Even though the raters could be trained in the concepts, it appears that their own worldview played a role in how they interpreted the metaphors. The rater’s subjectivity was highly influenced by their personality and cognitive phenomenology. For example, one of the raters appeared to be more pragmatic, fact-oriented, and detail-based than the other two raters who were more abstract and imagination based. Therefore, the two abstract raters tended to have much more agreement with each other than with the fact-based rater.

The third major methodological issue was the issue of those individuals who did not provide any metaphors. Some individuals used highly literal and straightforward language. Others used such poor grammar and writing style that they seemed unable to use complex metaphoric statement needed to complete the task adequately. This was somewhat of a surprise as these student were college students but many wrote at an
elementary school level. In addition, the average age was 20 years old. Perhaps these young adults were not able to describe their experience in colorful and meaningful ways. This lack of experience in describing their thoughts may be a better explanation for their absence of metaphor rather than non-metaphoric thinking.

Nevertheless, because these individuals did not provide any metaphors to analyze and rate (by formism, mechanism, organicism, and contextualism), their rating scores could not be included in the final canonical analysis. This may have lowered the strength of the results for the dependent variables as the number of participants was reduced to 148. While no differences in the canonical correlation results were found when performed without those who provided at least one metaphor, there were statistically significant differences between the two groups. The two groups differed on three of the five independent variables: the OMPI, Empiricism, and Metaphorism. The difference on the OMPI and Metaphorism are both theoretically consistent and provide validity to the instruments. This means that individuals who used metaphors to describe their experience also scored higher on the OMPI (more organismic and therefore more metaphorical) and the Metaphorism scale of the PEP. The same individuals tended to score higher on the Empiricism scale as well – this result is not consistent with theory. Nevertheless, these differences give support to the possibility that the lack of metaphor on some data points may have impacted the results.

Ultimately, this project benefited from operating in the quantitative realm because it allowed for heavy data testing, significance testing, and a large sampling size. In
addition, this project was able to successfully collect large amounts of qualitative data. However, given the described methodological issues, this project may have been better served through the use of a qualitative design primarily. This project has shown that a significant relationship does exist between these variables, but was not able to describe in more detail how these factors influence each other. This, perhaps, is the most important finding of this study: that even the most tedious preparation to turn qualitative information into quantitative data could not overcome the subjective, deeply personal, and idiosyncratic nature of mental metaphors. The structures that were being studied are highly internal meaning making structures that not only resist quantification but also are even unknown to the participants themselves. Hopefully, in future studies, a qualitative approach may help elucidate the specific nature of these relationships. It appears that to truly understand metaphor is to understand the individual’s unique perception of experience and process of making meaning of that reality.
APPENDIX A
Organicism-Mechanism Paradigm Inventory

PARADIGM INVENTORY

This is a questionnaire about how people relate to their world. Listed below are pairs of statements concerning thoughts, attitudes, and ways of behaving. Please read each statement carefully and find the one that pertains to you more closely. No statement is more “correct” than the other. Please answer all items by circling only one statement (“a” or “b”) in each pair.

1. a. Schools should be where a child learns to think for himself.
   b. Schools should be where a child learns basic information.

2. a. Things really look different if we change how we see them.
   b. Things really look different only if they are changed.

3. a. Organisms change by forces from outside themselves.
   b. Organisms can change themselves.

4. a. A good judge is purely objective.
   b. A good judge is not objective and knows it.

5. a. Great discoveries come from scientific imagination.
   b. Great discoveries come from scientific experimentation.

6. a. All things stay basically the same over time.
   b. All things change from one moment to the next.

7. a. A business executive needs time to analyze the facts.
   b. A business executive needs time for creative thinking.
8. a. Before making a big decision, I like to sleep on it.
   b. Before making a big decision, I like to get all the information.

9. a. Progress in science occurs when there is a new way of looking at events.
   b. Progress in science occurs when an important observation is made.

10. a. A criminal is just a burden to society.
    b. A criminal has a function in society.

11. a. Our knowledge is limited by our observations.
    b. Our knowledge is limited by our imagination.

12. a. Living is a process of using up the available supplies.
    b. Living is a process of exchanging supplies back and forth.

13. a. Events are sometimes just the same as before.
    b. Events are always new and different in some way.

14. a. Divorce is often a phase in each partner’s growth.
    b. Divorce is usually the result of incompatible personalities.

15. a. Facts are more useful than a good idea.
    b. Facts are less useful than a good idea.

16. a. Each relationship I have is different.
    b. Each relationship I have is much like the previous one.

17. a. Things are changed only when they are directly affected.
    b. Things are changed by everything else.
18. a. We learn by carefully examining individual facts.
   b. We learn by finding order in an array of facts.

19. a. To live independently of other people is not a realistic goal.
   b. To live independently of other people is a realistic goal.

20. a. War can be understood by examining what purpose it served.
   b. War can be understood by examining its causes.

21. a. The world is like a large, living organism.
   b. The world is like a large, complex machine.

22. a. A child discovers the world by being praised and punished.
   b. A child discovers the world by testing his dreams and fears.

23. a. I can change things in my family only by planned action.
   b. I can change things in my family just by being who I am.

24. a. A child’s world is different than mine.
   b. A child’s world is like mine, but he knows less.

25. a. Man is made by his environment.
   b. Man and his environment affect each other.

26. a. To resolve a family dispute, it is important how we look at the facts.
   b. To resolve a family dispute, it is important to discover all the facts.

Scoring key: The organismic statements are 1(a), 2(a), 3(b), 4(b), 5(a), 6(b), 7(b), 8(a), 9(a), 10(b), 11(b), 12(b), 13(b), 14(a), 15(b), 16(a), 17(b), 18(b), 19(a), 20(a), 21(a), 22(b), 23(b), 24(a), 25(b), 26(a)
### APPENDIX B

**BEQ**

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
</tbody>
</table>

1. Whenever I feel positive emotions, people can easily see exactly what I am feeling.
2. I sometimes cry during sad movies.
3. People often do not know what I am feeling. (R)
4. I laugh out loud when someone tells me a joke that I think is funny.
5. It is difficult for me to hide my fear.
6. When I’m happy, my feelings show.
7. My body reacts very strongly to emotional situations.
8. I’ve learned it is better to suppress my anger than to show it. (R)
9. No matter how nervous or upset I am, I tend to keep a clam exterior. (R)
10. I am an emotionally expressive person.
11. I have strong emotions.
12. I am sometimes unable to hide my feelings even though I would like to.
13. Whenever I feel negative emotions, people can easily see exactly what I am feeling.
14. There have been times when I have not been able to stop crying even though I tried to stop.
15. I experience my emotions very strongly
16. What I'm feeling is written all over my face.

(R) indicates that the item is reverse scored.
APPENDIX C

P.E.P.
Experimental Form VI

Directions

For each of the following statements, you are to indicate your personal agreement or disagreement on the scale provided on the answer sheet. ‘CD’ means complete disagreement with the statement, ‘MD’ means moderate disagreement, ‘N’ means neutral, ‘MA’ means moderate agreement, and ‘CA’ means complete agreement.

Here is a sample question:

The Roman Empire fell because of moral degeneration of its rulers

CD   MD   N   MA   CA

In this example, the person agrees with the statement, but not entirely, so they have circled ‘MA’ – moderate agreement.

Your personal preferences alone are required. There are no right or wrong responses. It is necessary, however, that you answer all of the questions. Be sure to clearly mark the appropriate space for each question. Use a pencil and erase any extra marks. Trust your first impression. There is no time limit.
1. A good teacher is primarily one who has a sparkling entertaining delivery.

2. The thing most responsible for a child's fear of the dark is thinking of all sorts of things that could be "out there".

3. Most people who read a lot, know a lot because they come to know of the nature and function of the world around them.

4. Higher education should place a greater emphasis on fine arts and literature.

5. I would like to be a philosopher.

6. A subject I would like to study is biology.

7. In choosing a job I would look for one which offered opportunity for experimentation and observation.

8. The Bible is still a best seller today because it provides meaningful accounts of several important eras in religious history.

9. Our understanding of the meaning of life has been furthered most by art and literature.

10. More people are in church today than ever before because they want to see and hear for themselves what ministers have to say.
11. It is of primary importance for parents to be consistent in their ideas and plans regarding their children.

12. I would choose the following topic for an essay: The Artist in an Age of Science.

13. I feel most at home in a culture in which people can freely discuss their philosophy of life.

14. Responsibility among men requires an honest appraisal of situations where irresponsibility has transpired.

15. A good driver is observant.

16. When people are arguing a question from two different points of view, I would say that the argument should be resolved by actual observation of the debated situation.

17. I would like to visit a library.

18. If I were visiting India, I would be primarily interested in understanding the basis for their way of life.

19. Human morality is molded primarily by an individual's conscious analysis of right and wrong.

20. A good indicator of decay in a nation is a decline of interest in the arts.

21. My intellect has been developed most by learning methods of observation and experimentation.
22. The prime function of a university is to teach principles of research and discovery.
23. A good driver is even tempered.
24. If I am in a contest, I try to win by following a pre-determined plan.
25. I would like to have been Shakespeare.
26. Our understanding of the meaning of life has been furthered most by mathematics.
27. I like to think of myself as a considerate person.
28. I would very much like to have written Darwin's "The Origin of Species".
29. When visiting a new area, I first try to see as much as I possibly can.
30. My intellect has been developed most by gaining insightful self knowledge.
31. I would be very disturbed if accused of being insensitive to the needs of others.
32. The kind of reading which interests me most is that which creates new insights.
33. The greatest evil inherent in totalitarian regime is alienation of human relationships.
34. Most atheists are disturbed by the absence of factual proof of the existence of God.
35. In choosing a job I would look for one which offered the opportunity to use imagination.

36. In my leisure I would more often like to enjoy some form of art, music, or literature.

37. The kind of reading which interests me most is that which stimulates critical thought.

38. I prefer to associate with people who are spontaneous.

39. In my leisure I would like to play chess or bridge.

40. Most people who read a lot, know a lot because they develop an awareness and sensitivity through their reading.

41. When visiting a new area, I first pause to try to get a “feel” for the place.

42. Many T.V. programs lack sensitivity.

43. I like to think of myself as observant.

44. Happiness is largely due to sensitivity.

45. I would be very disturbed if accused of being inaccurate or biased in my observations.

46. A good teacher is primarily one who helps his students develop their powers of reasoning.
47. I would like to be a novelist.  
48. The greatest evil inherent in a totalitarian regime are restrictions of thought and criticism.  
49. Most people are in church today than ever before because theologians are beginning to meet the needs of the educated people.  
50. The most valuable person on a scientific research team is one who is gifted at critical analysis.  
51. Many T.V. programs lack organization and coherence.  
52. I like country living because it gives you a chance to see nature first hand.  
53. Upon election to Congress I would endorse steps to encourage an interest in the arts.  
54. It is important for parents to be familiar with theories of child psychology.  
55. The prime function of a university is to train the minds of the capable.  
56. I would like to have written Hamlet.  
57. Higher education should place a greater emphasis on mathematics and logic.  
58. The kind of reading which interests me most is that which is essentially true to life.
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<td>A subject I would like to study is art.</td>
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<td>60.</td>
<td>I feel most at home in a culture in which realism and objectivity are highly valued.</td>
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<td>The prime function of a university is to develop a sensitivity to life.</td>
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<td>62.</td>
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<td>If I were visiting India, I would be primarily interested in noting the actual evidence of cultural change.</td>
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<td>64.</td>
<td>When buying new clothes I look for the best possible buy.</td>
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<td>66.</td>
<td>When a child is seriously ill, a good mother will remain calm and reasonable.</td>
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<td>68.</td>
<td>Many T.V. programs are based on inadequate background research.</td>
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<td>69.</td>
<td>Higher education should place greater emphasis on natural science.</td>
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<td>70.</td>
<td>I like to think of myself as logical.</td>
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<td>71.</td>
<td>When people are arguing a question from two different points of view, I would say that each should endeavor to assess honestly his own attitude and bias before arguing further.</td>
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72. When reading an historical novel, I am most interested in the factual accuracy found in the novel.

73. The greatest evil inherent in a totalitarian regime is distortion of the facts.

74. A good driver is considerate.

75. Our understanding of the meaning of life has been furthered most by biology.

76. I would like to have been Galileo.

77. My children must possess the characteristics of sensitivity.

78. I would like to be a Geologist.

79. A good indicator of decay in a nation is an increase in the sale of movie magazines over news publications.

80. I would be very disturbed if accused of being illogical in my beliefs.

81. Most great scientific discoveries come about by thinking about a phenomenon in a new way.

82. I feel most at home in a culture in which the expression of creative talent is encouraged.

83. In choosing a job I would look for one which offered a specific intellectual challenge.

84. When visiting a new area, I first plan a course of action to guide my visit.
85. A good teacher is primarily one who is able to discover what works in class and is able to use it.

86. Most great scientific discoveries come about by careful observation of the phenomenon in question.

87. Most people who read a lot, know a lot because they acquire an intellectual proficiency through the sifting of ideas.

88. I would like to visit a botanical garden or zoo.

89. When reading an historical novel, I am most interested in the subtleties of the personalities described.

90. When playing bridge or similar games I play the game by following spontaneous cues.
APPENDIX D
Psychoepistemological Profile—Revised 1

Directions

For each of the following statements, you are to indicate your personal agreement or disagreement. Please use the following scale to rate your responses.

1 = complete disagreement with the statement
2 = moderate disagreement
3 = neutral
4 = moderate agreement
5 = means complete agreement.

Here is a sample question:

The Roman Empire fell because of the degeneration of its rulers.

In this example, the person agrees with the statement, but not entirely, so they have circled in the number 4 for 'moderate agreement.'

Your personal preference alone is required. There are no right or wrong responses. It is necessary, however, that you answer all of the questions. Be sure to clearly mark the appropriate space for each question. Trust your first impression. There is no time limit.

---

1. Higher education should place a greater emphasis on fine arts and literature.

2. I would like to be a philosopher.

3. A subject I would like to study is biology.

4. In choosing a job I would look for one which offered opportunity for experimentation and observation.

5. Our understanding of the meaning of life has been furthered most by art and literature.

6. It is of primary importance for parents to be consistent with their ideas and plans regarding their children.

7. I would choose the following topic for an essay: The Artist in an Age of Science.

8. I would like to visit a library.

9. A good indicator of decay in a nation is a decline of interest in the arts.

10. The prime function of a university is to teach the principles of research and discovery.

11. If I am in a contest, I try to win by following a pre-determined plan.
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<td>12. Our understanding of the meaning of life has been furthered most by mathematics.</td>
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<td>13. I would very much like to have written Darwin's &quot;The Origin of the Species.&quot;</td>
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<td>14. The kind of reading which interests me most is that which creates new insights.</td>
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<td>15. In choosing a job I would look for one which offered the opportunity to use some imagination.</td>
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<td>16. In my leisure I would most often like to enjoy some form of art, music, or literature.</td>
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<td>17. In my leisure I would like to play chess or bridge.</td>
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<td>35. Most great scientific discoveries come about by thinking about a phenomenon in a new way.</td>
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<td>36. I feel most at home in a culture in which the expression of creative talent is encouraged.</td>
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<td>38. I would like to visit a botanical garden or zoo.</td>
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<td>39. When reading a historical novel, I am most interested in the subtleties of the personalities described.</td>
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# APPENDIX E

Psycho-Epistemological Profile

Scoring Key for

Revised Experimental Form V & VI

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APPENDIX F
Root Metaphor Rating Guide

Please rate each metaphor for its correspondence or "fit" with each of the following four worldviews. For each metaphor, please circle the number corresponding to this guide: 1 = Mostly Dissimilar; 7 = Most Similar

1. Formism

   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

2. Mechanism

   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

3. Contextualism

   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

4. Organicism

   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
APPENDIX G
Narrative Response Form

1. Please tell me about one event or situation in your past that you believe was especially significant and that still may affect you today. It can be about people, places, events; anything that you feel is significant to you. Write the situation on the next page and please write on the back if needed. Try to be as descriptive as possible. Especially describe your feelings and emotions regarding the event both at the time and now.
2. Please tell me about one event or situation that is occurring in your present that you believe is especially significant and affects you greatly. It can be about people, places, events; anything that you feel is significant to you. Write the situation on the next page and please use the back of the page if necessary. Try to be as descriptive as possible. Especially describe your feelings and emotions regarding the event.
3. Please tell me about an event or situation that you anticipate to occur in the future that you believe will be especially significant in your life. It can be about people, places, events, anything that you feel will be significant to you. Write the situation on the next page and please use the back of the page if necessary. Try to be as descriptive as possible. Especially describe your feelings and emotions that you anticipate you will feel as well as the feelings you have currently.
APPENDIX H

CONSENT FORM

THE UNIVERSITY OF SOUTHERN MISSISSIPPI

AUTHORIZATION TO PARTICIPATE IN RESEARCH PROJECT

Participant’s Name: __________________________________________________

Consent is hereby given to participate in the research project entitled __Emotional Expression__. All procedures and/or investigations to be followed and their purpose, including any experimental procedures were explained by __James M. Adams__.

Information was given about all benefits, risks, inconveniences, or discomforts that might be expected.

The opportunity to ask questions regarding the research and procedures was given. Participation in the project is completely voluntary and participants may withdraw at any time without penalty, prejudice, or loss of benefits. __All personal information is strictly confidential and no names will be disclosed__.

Also note that the questions may activate uncomfortable emotions. If discomfort is experienced and assistance is needed, please call the University Counseling Center at 601-266-4829.

Questions concerning the research, at any time during or after the project, should be directed to __James M. Adams__ at (813) 899-9259 or (601) 266-4602. This project and this consent form have been reviewed by the Human Subjects Protection Review Committee which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to the Director of Research and Sponsored Programs at (601) 266-4119.

__________________________________________________________  ________________
Participant’s Name                                      Date

__________________________________________________________  ________________
Signature of Auditor - Witness                         Date
Root Metaphor Theory

Stephen Pepper, an American philosopher producing his most influential works in the mid-1900s, wrote primarily in the area of aesthetics (the philosophical study of nature and creation) of man. His most famous work is concerned with the concept of “world hypotheses,” or cognitive models of the world based on the inferences and observations an individual makes (Pepper, 1942). A world hypothesis (also called a world view or a world theory) is a metatheory that underlies one’s basic interpretation of the world and internal philosophies that organize experience and their understanding of that experience. Each world hypothesis is derived from a root metaphor. The root metaphor works like this: the individual; wanting to understand the world and events observes the environment (Pepper, 1942). This person gravitates toward some common sense fact and then uses that fact as the basis for further interpretations and comprehension of the world (the root metaphor). This basic fact begins to expand in structure defining each characteristic and becoming a well-developed and extensively challenged and tested theory or “hypothesis” of the world. The hypothesis, also called a worldview, has been shown to be correlated with personality characteristics (Johnson, 1984; Johnson et al., 1988). In other words, those who have differing hypotheses also tend to have different personality portraits.

Each root metaphor has a set of defining categories or structural characteristics that act as “basic concepts of explanation and description” (Pepper, 1942, p. 91). Pepper
outlined four hypotheses: formism, mechanism, contextualism, and organicism.

**Formism** is derived from the root metaphor of similarity. It is based primarily in the "simple common-sense perception of similar things" (Pepper, 1942, p. 151). One can easily find things that are similar (and different) in the world. We are naturally attracted to seeing similarities and categories of things (e.g., trees, cars, types of people, etc.). Lyddon (1989b) proposed that psychological theories of personality type and the psychological diagnostic system fit best into the root metaphor. Discrimination of differences is carried out on the grounds of similarities and new categories can be created (Pepper, 1942). For example, there may be one blue sheet of paper and one yellow sheet amidst a large group of pink sheets. Therefore, the blue and yellow sheets are similar because they are both different than the pink. The formistic individual bases the categories on character: “the qualities and relations that are tied to a given object” (p. 154). Formists are not focused on systemic organization or interested in explaining relationships. Certain concepts can fit into several categories but the process of that organization is not important.

**Mechanism** is based on the root metaphor of the machine (Pepper, 1942). The focus of interpretation is on causal relationships and the relationships of their discrete parts. These parts are assumed to be independent from each other but also connected and related. Outcomes are believed to be predictable and require exerted force or energy. A mechanistic thinker will view the world as a machine; history is predictable, laws of science are based in cause and effect, etc. Pepper used the example of a lever resting on a

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fulcrum. The two objects exist independently but exist in such a relation to each other that energy applied to one would have predictable, measurable, and controllable effect on the other. For instance, if one applied pressure to the lever, it would pull up a weight on the other side. Lyddon (1987) theorized that psychological theories such as early forms of behaviorism utilize a mechanistic underpinning. Also, individuals preferring a more behavioral therapeutic approach have been found to subscribe to a more mechanistic worldview (Lyddon 1992). Due to the integrative nature of mechanism, the parts of the machine are assumed to fit together. Therefore, the goal of mechanism is to discover the parts of the “machine” and understand how they relate to each other.

Contextualism is based on the root metaphor of the historic event (Pepper, 1942). By “historic event” Pepper was not referring to a dead, past event but rather a living history that is dynamic and currently active. Examples of such events are making a boat, running a race, laughing at a joke, etc. Each of these events has two characteristics: quality and texture. Quality is the experiential aspect or nature of an event while texture involves the details and relationships that comprise an event. Quality is comprised of spread and fusion. The event is believed to be related to the past and future of the event – this is called spread. Fusion is the integration of the textual details of the event. In essence, contextualism focuses on a given object by looking at it as a whole in which the parts are integrated and related. Phenomena are always understood in their “contexts.”

Organicism is based on the root metaphor of the process of organic development such as can be found in living, growing, organic systems (Pepper, 1942).
Like contextualism, organicism does not map well onto its root metaphor in a linear, common sense fashion. In addition, contextualism and organicism are very similar in many ways. For example, both place emphasis on events in their surrounding structures and find their meaning form the holistic organization of the many events (in other words, they are both synthetically based). However, in some ways they are dramatically different and even opposed. For example, contextualism focuses on the time and duration of an event, while organicism is not concerned about time but instead about process. In organicism, constant and dynamic change is a given while stability is an anomaly to be explained. An example in psychology would be developmental stage models. For instance, a person is expected to flow from one stage to another in an organized fashion (Hayes et al., 1988). The whole is the basic building block of a concept – the parts are meaningless unless they help the individual to understand the entire concept or the whole (Pepper, 1942). Organicism has been associated with constructivism – the world is an actively construed part of one’s developmental process (Hayes et al., 1988). Empirically, Lyddon and Adamson (1992) found that persons with a commitment to organicism equally preferred three different counseling approaches: Constructivist, Behaviorist, and Rationalist. It was suggested that perhaps organicists are “more flexible in their decision making and, as a result, are capable of seeing the potential value of different approaches to counseling.” (p. 45)
## Root Metaphor Rating Guide

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Root Metaphor</th>
<th>Focus</th>
<th>Metaphoric Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formism</td>
<td>Similarity</td>
<td>Categories and types</td>
<td>Love is like work.</td>
</tr>
<tr>
<td>Mechanism</td>
<td>Machine</td>
<td>Relationships and cause and effect interactions (linear)</td>
<td>Love is like a clock.</td>
</tr>
<tr>
<td>Contextualism</td>
<td>Historic Event</td>
<td>The whole which is changing over time; parts are connected to whole</td>
<td>Love is like a stream.</td>
</tr>
<tr>
<td>Organicism</td>
<td>Process of Organic Development</td>
<td>Process of constant action and change that is dynamic, non-linear, and growth oriented</td>
<td>Love is like a forest.</td>
</tr>
</tbody>
</table>
APPENDIX K

ROOT METAPHOR PANEL READINESS TEST

Please place the letter of the worldview (root metaphor) that matches each response.

F = Formism (Similarity/dissimilarity metaphor)
M = Mechanism (Machine metaphor)
O = Organismic (Organic metaphor)
C = Contextualistic (Historical event metaphor)

1. ________ Greg's present act of giving a party is best seen as the present stage in his social development. Greg passed through several phases prior to this present one. This present behavior makes sense as part of the current stage in his development.

2. ________ Alan's borrowing money now is one stage in the development of his dependability. This development has roots in his past and there are stages in the future though which he will pass.

3. ________ Alan is borrowing a lot of money because he wants to buy a new car. Thus there is a specific reason for his borrowing money at this time.

4. ________ Steven is an aggressive guy. He's the kind of person who knows how to take advantage of a business opportunity.

5. ________ There are many ways to look at Bob's not doing his job. Professionally he feels one way about it, and psychologically he feels another way. There are many ways Bob feels about not doing his job.

6. ________ There are a number of ways of looking at Frank's getting a divorce. Emotionally he feels one way about it, and morally he feels another way about it. There is no one way Frank understands it.

7. ________ Steven's income increased because his union negotiated a new contract that provided for a pay increase. Thus there was a specific cause for the increase in Steven's income.

8. ________ Harry's present emotional problems represent the current stage in his development of his ability to handle stress. This development began several years ago when Harry was quite young.

9. ________ The present vacation is one stage in the development of Mark's ability to relax. This development began several years ago and has passed
through many previous stages prior to reaching its present point.

10. ______ There's no one way to look at Peter's moving to a new place. Socially he feels one way about it, and economically he feels another way. There are many ways Peter understands it.

11. ______ Mike is a good student. Mike is the kind of person who has always done well in school and could be expected to go to college.

12. ______ There are many ways to look at Steven's income increasing. Professionally he feels one way about it, and economically he looks at it another way. There are many ways Steven understands this event.

13. ______ Bob is a rather incompetent person. He's the kind of person who's always making mistakes.

14. ______ Jack is a person who is not afraid to take a risk. He is the kind of person who could be expected to start a new business.

15. ______ Frank is getting a divorce because he and his wife fight constantly. Thus there is a specific reason for the divorce.

16. ______ Mike's starting college is one stage in his intellectual development. This development began several years ago and has passed through many stages before reaching its present level.

17. ______ Peter's present move to a new place to live is only one stage in the development of his independence. This development has roots in the past and there are stages in the future through which Peter will pass on his way to adulthood.

18. ______ David's taking a new job is one stage in the development of his competence. This development began several years ago and passed through many stages before reaching its present phase.

19. ______ Greg is giving a party because his parents are celebrating their 25th wedding anniversary. Thus there was a definite reason for his giving a party at this time.

20. ______ David is a real go-getter. He is always striving to get ahead. He's the kind of person who could be expected to get into new things.

21. ______ Peter, is moving to a new place to live because last week he received a notice that his apartment building was being torn down. Thus there is a specific cause for moving to a new place.
22. ______ David is taking a new job because he wants more creative, challenging work. Thus there is a specific reason for his taking a new job at this time.

23. ______ There are several ways to look at Harry's having emotional problems. Socially he feels one way about it, and intellectually he feels another way. There's no one way Harry looks at it.

24. ______ Mark is fun-loving person. He's the kind of person who really enjoys visiting new places.

25. ______ Frank's getting a divorce is the current stage in the development of his emotional detachment. This development began several years ago and has passed through many previous stages.

26. ______ There are several ways to look at David's taking a new job. Monetarily David feels one way about it, and professionally he feels another way. There's more than one way David sees it.

27. ______ Harry has emotional problems because his wife left him recently. Thus there is a specific cause for Harry's emotional problems.

28. ______ Louis is painting a portrait because he has promised to do a family portrait for a friend. Thus there is a specific reason for his painting a portrait at this time.

29. ______ There are several ways to look at Mike's starting college. Economically he feels one way about it, and intellectually he feels another way. There are several ways Mike looks at this event.

30. ______ There are many ways to look at Mark's taking a vacation. Socially he feels one way about it, and economically he feels another way. There's no one true way Mark understands it.

31. ______ Mike is starting college because he wants to become a doctor. Thus there is a definite reason Mike is starting college now.

32. ______ There are many ways to look at Alan's borrowing a lot of money. Economically, he feels one way about it, and emotionally he feels one way about it. There is no one way he sees it.

33. ______ Harry is a very nervous person. He's the kind of a person who could be expected to have emotional problems.

34. ______ Jack is starting a new business because his old business was wiped out in a fire. Thus there is a specific cause for a new business at this time.
35. _______ Mark is taking a vacation at this time of the year because he wants to go to Europe but can't afford the usual rates. Thus there is a specific reason for his taking a vacation now.

36. _______ Bob is not doing his job because he thinks the machines at his plant are old, and unsafe. Thus there is a definite reason why Bob is not doing his job.

37. _______ Frank is an immature person. He's the kind of person who has never been able to maintain a close relationship.

38. _______ Jack's starting a new business is the current stage in the development of his initiative. This development began several years ago and has passed through several stages prior to the present one.

39. _______ There are many ways to look at Greg's giving a party. Socially he feels one way about it, and psychologically he feels another way. There is no absolute way Greg looks at it.

40. _______ There are many ways to look at Jack's starting a new business. Monetarily he feels one way about it, and professionally he feels another way about it. There is more than one way Jack sees it.

41. _______ Louis is a very artistic, creative person. He's the kind of person who expresses his feelings by painting.

42. _______ Steven's present income increase is part of the development of his earning power. This development began during his teenage years with his first job and has progressed through several stages to its present state.

43. _______ Peter is a drifter. He's the type of person who has never put any roots down and is always moving around.

44. _______ Bob's not doing his job is part of a larger pattern of reacting to increased responsibility. This pattern began when he was quite young and developed through his teenage years.

45. _______ Louis' painting a portrait is one stage in the development of his artistic style. This development began several years ago and has passed through several previous stages.

46. _______ Greg is a very sociable, outgoing person. He's the kind of a person who is always organizing some party or get-together.

47. _______ Alan is a big spender. He is the kind of person who could be expected to buy things before he's saved up for them.
48. There are many ways to look at Louis' painting a portrait. Professionally he feels one way about it and economically he feels another way. There are many ways he looks at it.
APPENDIX L

INSTRUCTIONS:

"Thank you for agreeing to complete this survey. You will find that the first page is a consent form for you to read and sign. Please write your name on the top line marked ‘Participant’s name’, read the entire consent form, and sign if you are in agreement."

"Does anyone have questions regarding the consent form?"

(Collect consent forms)

[If they are not getting class credit] "Please read the first page instructions and tear off the bottom half of the first page. This will be your number for the drawing following the end of the questionnaires."

"Follow all of the instructions printed in the booklet and complete the questionnaires. If you have any questions at any point, please ask."
APPENDIX M

THANK YOU FOR TAKING THIS SURVEY. I EXPECT THAT IT SHOULD NOT TAKE MORE THAN ONE HOUR. PLEASE READ AND FOLLOW THE INSTRUCTIONS. IF YOU ARE PART OF THE DRAWING, PLEASE TEAR OFF AND KEEP THE BOTTOM PORTION OF THIS PAPER WITH YOUR NUMBER WRITTEN ON IT.

PARTICIPANT NUMBER ____________

--------------------------------------------

PARTICIPANT NUMBER ____________
APPENDIX N

ORAL PRESENTATION

1. **Purpose:** We are conducting a study investigating how people describe their most significant experiences. The study is being conducted as a part of a dissertation for a student in the Counseling Psychology Ph.D. program here at USM and will be used for research only.

2. **Description of the study:** Each one of you will be asked to complete a total of 3 questionnaires asking about your opinions and views of the world. The last questionnaire asks you to write about significant experiences throughout your life. This study will require about 30 minutes of your time.

3. **Benefits:** For those of you not receiving class credit for participating in this study, you will be entered into a drawing to win one of several prizes such as a gift certificate to __________________________ valued at $20.

4. **Risks:** One of the questionnaires will ask you about personally significant experiences throughout your life. It is possible that you may write about a painful or uncomfortable personal experience. If you experience significant feelings of discomfort as a result of writing about your life, please contact the University Counseling Center at 601-266-4829.

5. **Confidentiality:** Your responses are strictly confidential and will be destroyed following the completion of this study. In addition, your names will not be associated with your responses.

6. **Alternative Procedures:** If you do not wish to participate in this study, then you may leave class early. If you need to complete class credit, please see your instructor for alternative methods of completing class requirements.

7. **Subject’s Assurance:** This project has been reviewed by the Human Subjects Protection Review Committee, which ensures that research projects involving human subjects follow federal regulation. Any questions or concerns about rights as a research subject should be directed to the Chair of the Institutional Review Board at 601-266-6820. Participation in the project is completely voluntary, and subjects may withdraw from this study at any time without penalty, prejudice, or loss of benefits. Any questions about the research should be directed to James Adams or Dr. William Lyddon at 813-899-9259 or 601-266-6820.

______________________________
Signature of Person Giving Oral Presentation

______________________________
Date
APPENDIX O

Root Metaphor Rating Guide

Please rate each metaphor for its correspondence or "fit" with each of the following four worldviews. For each metaphor, please circle the number corresponding to this guide: 1 = Mostly Dissimilar; 7 = Most Similar

Metaphor: “The hardest part of this **journey** to me is taking the....”

<table>
<thead>
<tr>
<th>Formism</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanism</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Contextualism</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Organicism</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

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APPENDIX P

HUMAN SUBJECTS PROTECTION REVIEW COMMITTEE

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Human Subjects Protection Review Committee in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

• The risks to subjects are minimized.
• The risks to subjects are reasonable in relation to the anticipated benefits.
• The selection of subjects is equitable.
• Informed consent is adequate and appropriately documented.
• Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
• Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
• If approved, the maximum period of approval is limited to twelve months. Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 26082901
PROJECT TITLE: Metaphor Production in the Expression of Emotional Language: An Investigation into the Influence of Worldview, Epistemological Preference, and Emotional Expressivity
PROPOSED PROJECT DATES: 07/01/06 to 12/31/06
PROJECT TYPE: Dissertation or Thesis
PRINCIPAL INVESTIGATORS: James M. Adams
COLLEGE/DIVISION: College of Education & Psychology
DEPARTMENT: Psychology
FUNDING AGENCY: N/A
HSPRC COMMITTEE ACTION: Expedited Review Approval
PERIOD OF APPROVAL: 10/16/06 to 10/15/07

Lawrence A. Hosman, Ph.D.
HSPRC Chair

10-18-06

Date
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& M. J. Mahoney (Eds.), *Constructivism in psychotherapy* (pp. 11-38),


Guilford.


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England: Cambridge University Press.


