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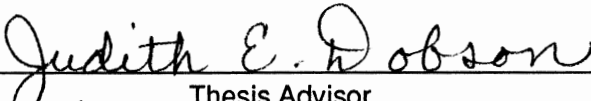
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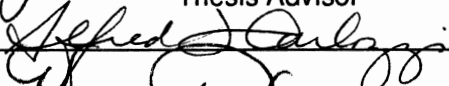Stillwater, Oklahoma
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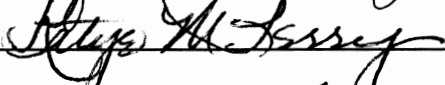University of Central Arkansas
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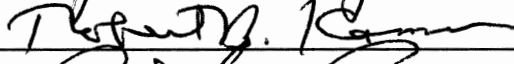
PROBLEM SOLVING ORIENTATION:

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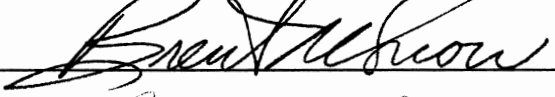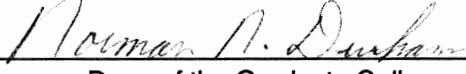
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CHAPTER I

INTRODUCTION

There has been a resurgence of interest in the field of gender differences. This renewed interest was highlighted in a feature section, "The Year Ahead," in the Chronicle of Higher Education (Scholars, 1987, p. A12). The Chronicle stated that ". . . new questions and challenged assumptions" are what women's studies have been about for years. Stimpson (Scholars, 1987), a leading spokesman for women's studies, describes a coming of age of the discipline. At one time the research emphasized women as a group characterized primarily by the discrimination against it. "It has moved from the study of a separate sex to a study of a social system," Stimpson (Scholars, 1987, p. A12). Past research tended to take one of two approaches. One approach responded to the societal bias that the masculine norm was the healthier, more effective approach and was designed to prove that women could indeed have those preferred qualities. Where differences did exist, the second approach attempted to prove that the differences were due to socialization rather than innate differences in the sexes. The new focus in research has returned to the idea that there are differences, but now emphasizes these differences as positive. (Scholars, 1987).

Gilligan (1982) introduced the idea that men and women may perceive the world, and more importantly make decisions, from different perspectives. She advocated the importance of counselors being aware that the decision

making process may be different in terms of what the sexes value or consider. Belenky, Clinchy, Goldberger, and Tarule (1986) agreed with Gilligan and stated that women have a special way of viewing reality and drawing conclusions, or of knowing.

As researchers continued to define the subtle differences in the way men and women process information there has been little success in finding a pure, gender-linked dichotomy in the way men and women approach issues (Ellickson, Swain, & Forrest, 1987; Magolda, 1987). In studies there seemed to be male and female subjects who were not consistent in the way they approach issues. This study attempted to explain the apparent inconsistency in some subjects' approaches to problem solving.

Inherent in early theoretical foundations was the concept that style difference was a dichotomous variable, masculine vs. feminine (Constantinople, 1973) . The research was oriented to one dimension of functioning, most typically being either a cognitive aspect or an interpersonal aspect. There were common themes in the operational definitions of the various independent variables in terms of the degree to which the subject used others as a source of information, whether the subject was sensitive to the needs of others, and the degree to which they valued their own thoughts and positions.

While these qualities are not innately gender different, they were socialized differently by the genders (Chodrow, 1978; Marsh, 1978; Spence, Hilmreich, Stapp, 1975). Male children are encouraged to develop independence, while women are reinforced for dependent behavior and thought (Birns, 1976; Carew & Lightfoot, 1979; Fagot & Patterson, 1969). Broverman, Vogel, Broverman, Clarkson and Rosenkrantz (1972) completed an extensive review of the research in sex role stereotypes. They found the traits

used to describe the stereotypes could be grouped into two clusters, the Competency Cluster and the Warmth-Expressive Cluster. Men most often were seen as having those traits associated with the Competency Cluster and women with the Warmth-Expressive Cluster traits (See Figure 1). Those traits assigned to the masculine stereotype were most representative of field independent behavior and thought. In contrast, the traits of the feminine stereotype are similar to those of the field dependent person.

Competency Cluster

Feminine Descriptions	*Masculine Descriptions*
Not at all aggressive	Very aggressive
Not at all independent	Very independent
Does not hide emotions at all	Almost always hides emotions
Very subjective	Very objective
Very submissive	Very dominate
Very passive	Very active
Not competitive	Very competitive
Very home-oriented	Very worldly
Very sneaky	Very direct
Not adventurous	Very adventurous
Has difficulty making decisions	Can make decisions easily
Not at all confident	Very self-confident

Warmth-Expressive Cluster

Feminine Descriptions	*Masculine Descriptions*
Doesn't use harsh language	Uses very harsh language
Very tactful	Very blunt
Very gentle	Very rough
Very aware of other's feelings	Not at all aware of others feelings
Very quiet	Very loud
Very neat	Very sloppy
Very strong need for security	Very little need for security
Enjoys art and literature	Does not enjoy art and literature
Easily expresses tender feelings	Does not easily express tender feelings

Figure1. Common sterotypes for men and women.

When sex appropriate behavior was more commonly defined and agreed upon by society it was likely that the function described above did exist in a more dichotomous fashion, consistent with gender. As the concept of

androgyny became accepted, it would seem likely that mixed categories would become the norm (Bem, 1975; Lewis, 1986;).

Androgyny, as defined by Bem (1975), describes the individual who possesses approximately equal proportions of feminine and masculine characteristics. Bem argues that androgynous people are basically more adaptive to their environment. The most well-developed individual is one who combines the best of both worlds and who can therefore respond to a greater variety of situations with appropriate behaviors. There is some confirmation for this perspective in Spence, Hilmrich and Stapp, (1975) and Marsh (1987) whose research reports a higher level of self-esteem in those students who also scored as more androgynous. In addition, there is some evidence that androgyny is becoming the subjective standard for healthier functioning among mental health workers (Kravetz & Jones, 1981).

A theory which has attempted to account globally for these same types of differences is differentiation theory, or the concept of field dependence and field independence. Based on the work of Witkin, Oltman, Raskin & Karp (1971), Witkin & Goodenough (1977), Witkin (1978), Witkin, Goodenough, Oltman (1979), Witkin & Goodenough (1981), field dependent people are defined as those who depend on external referents to achieve solutions and field independent persons are those who utilize internal referents (Korchin, 1986). Most research has used performance on simple perceptual and intellectual tasks to differentiate field dependence versus field independence. The majority of research studies related to social behavior have addressed cognitive restructuring skills, such as group decision making (Oltman, Goodenough, Witkin, Freedman, Freedman, 1975; Witkin & Goodenough, 1977). In a review of the literature, Rapaczynski, Welkowitz, & Sadd (1979),

state the need for more research in the social and interpersonal behavior of field dependent and field independent people. There is currently no published instrument which attempts to differentiate field dependence and independence based on affective or interpersonal information.

A similar and more interpersonally oriented trait, for which there are standardized instruments, is the measure of introversion and extroversion, which was first introduced by Jung (1921). He originally defined extroverts as people who have a positive relationship to the object. Extroverts affirm their importance to such an extent that their subjective attitude is constantly related to and oriented by the object. In contrast, introverts' attitudes are abstracting; they are intent on withdrawing libido from the object, as though they had to prevent the object from gaining power over them (Jung,1921). A less analytical definition of these concepts has been furnished by Myers (Myers, 1980). Introverts' main interests are in the inner world of concepts and ideas; therefore, when circumstances permit, they concentrate perception and judgment on ideas. In contrast, extroverts are more involved with the world of people and things and likely to focus on the outside environment.

According to both theorists' definitions of introversion and extroversion, a primary differentiation is in the preferred point of reference, or in other words, reliant on their sources of most valued information. Jung (1921) and Myers & Myers (1980) described ways in which this preference tends to manifest itself in interpersonal situations, yet both see these as a result of the intrinsic disposition rather than on a causal factor. They address the preference for cognitive or interpersonal solutions as a separate function, i.e. Thinking Types versus Feeling Types.

In reviewing these two personality perspectives, one finds the limitation of viewing the preference for cognitive versus interpersonal solutions as a separate functioning. Either theory gives an independent description of cognitive and affective style. In both theories, one function is described, and the other is based on default. Witkin (1978, 1981) addressed this issue by making the assumption that affective functioning simply followed in a manner consistent with the cognitive function. Therefore Witkin (Witkin & Goodenough, 1981), recognizing the limitations of this position, introduced the concept of mobility as an area for future research. Mobility emphasizes that some people seem to change their behavior based on the situation. Jung's (1921) and Myers' (1976), (Myers and Myers, 1980) approach was to define a preference for context in addition to a preference for source of reference.

Problem Statement

Given that external and internal orientations are not consistent across cognitive and affective problem solving strategies and that people who alternate styles do exist, there is some evidence for a pattern of interaction between what has been known as field dependency, or source of reference, and the context of the problem to be solved. Studies of androgyny, as well as the differentiation theory, have indicated that the ability to change styles of orientation based on the context of the problem is a more effective model for living (Bem, 1975; Witkin & Goodenough, 1981). Moreover, research on androgyny and sex role studies have indicated that the characteristics of orientation style are not innately gender different, but are the result of child

rearing practices and societal expectations (Chodrow, 1978; Marsh, 1978; Spence et. al., 1975).

The intent of this study is to identify four patterns similar to field dependency which will be called problem orientation (see Figure II). This is in contrast to the traditional differentiation theory, which views field dependency as a simple dichotomy. Therefore, it is proposed that, in actuality, problem solving orientation is an interaction of the various functions rather than a dichotomous function or combination of functions.

The Executive   Androgyny

Internally Oriented Cognitive Internally Oriented Affect **1**	**2** Internally Oriented Cognitive Externally Oriented Affect
Externally Oriented **3** Cognitive Internally Oriented Affect	**4** Externally Oriented Cognitive Externally Oriented Affect

The Harmonizer   The Nurturer
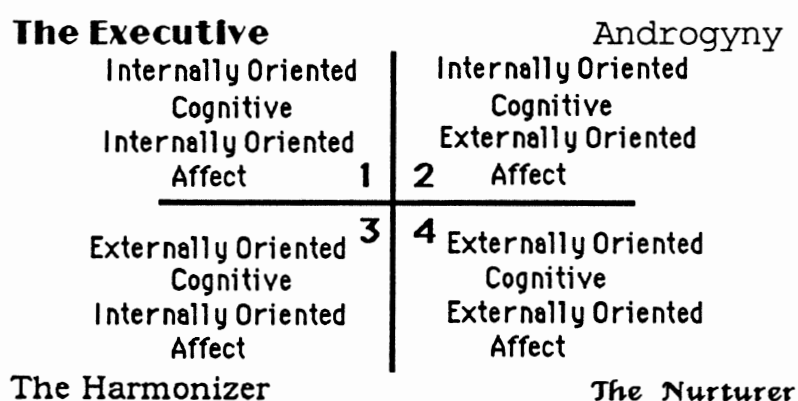
Figure 2. Problem solving orientations.

It is proposed that there is an interaction between four different categories of perspectives rather than the two opposites typically proposed in the research (Constantinople, 1973). The assumption, according to the problem solving paradigm, is that the Executive is most similar to the masculine stereotype and is internally oriented in most decisions. The Nurturer, similar to the feminine stereotype, is externally oriented or field dependent in all decisions. Categories 2, Androgyny, and 3, the Harmonizer, account for those subjects who appear to be inconsistent or have what Witkin & Goodenough

(1981) refer to as the trait of mobility. Specifically, Androgyny represents an orientation consistent with the construct of androgyny proposed in the literature (Bem, 1975). People in this category would be most likely internally oriented or independent on cognitive decisions such as work related decisions, and be interpersonally oriented in affective decisions. In contrast, the Harmonizer is externally oriented for cognitive decisions, and more internal in affective, emotional decisions. Since in these two categories there are different preferences, depending on the situation or type of decision to be made, these orientations can appear inconsistent. These may, however, be very consistent if one adds the dimension of context. Therefore, this study was specifically designed to answer the following question: Do four separate groups of problem solving orientation exist, along with their related problem solving styles, the Executive, the Androgyny, the Nurturer and the Harmonizer?

Significance of the Study

Past research has viewed problem solving orientation as a dichotomous function, with one orientation being field independence (Witkin, 1978; Witkin, Dyk, Faterson, Goodenough & Karp, 1962; Witkin & Goodenough, 1977; Witkin, Goodenough & Oltman, 1979; Witkin & Goodenough, 1981), or introversion (Jung, 1921; Myers, 1962), or an orientation to inner sources of information. The opposite orientation was defined as field dependency (Witkin, 1978; Witkin, et.al., 1962; Witkin & Goodenough, 1977; Witkin, et.al., 1979; Witkin & Goodenough, 1981), or extroversion (Jung, 1921; Myers, 1962), or an orientation to outer sources of information. This same dichotomy has been

seen in stereotypical gender research (Constantinople, 1973). However, these models do not address the people who seem to change orientation based on the context of the problem. This study proposes a new model of problem solving orientation which incorporates the contextual dimension. In this new model, problem solving orientation is seen as an interaction of problem context and source of reference.

Adding the dimension of context addresses the inconsistency identified in the earlier research (Ellickson et. al., 1987; Magolda, 1987). However, it is compatible with the constructs of androgyny (Bem, 1975) and mobility (Witkin & Goodenough, 1981). The quality of androgyny allows individuals the ability to access the strengths associated with both masculinity and femininity. The behavior of androgynous people is less constricted by conventional sex-role standards (Bem, 1975). Therefore, androgyny is becoming an accepted standard of mental health as it supports individuals as they move toward their own unique blends of attitudes and behaviors. In contrast, the traditional dichotomous approach to sex-role has been found to limit flexibility, adaptiveness, and interpersonal effectiveness (Kravetz & Jones, 1981).

Similarly, mobility, or the ability to move between field dependence and field independence, offers a greater potential for accommodating to a wider array of circumstances (Witkin & Goodenough, 1981). Witkin & Goodenough (1981) propose that mobility signifies a greater diversity or flexibility in ways of functioning and as such is more adaptive.

In the case of androgyny or mobility, it appears that whether a person manifests this flexibility, or a lack of it, is at least in part determined by socialization and experience (Witkin & Goodenough, 1981; Chodrow, 1978; Marsh, 1978; Spence et. al., 1975). That being the case, it is not a true gender

difference. Therefore, the possibility exists of nurturing future generations of more fully functioning individuals (Wolff & Taylor, 1979).

The new generation of gender research has begun to introduce a different style of learning and understanding (Belenky et. al., 1986, Chodrow, 1978, Gilligan, 1982). This gender research has been based in the philosophy that different is not necessarily less. This study builds on that philosophy, offering a framework for examining those different styles. It also moves beyond the present research in that it does not conceptualize the differences as bound to gender.

Definition of Terms

Androgyny

People whose scores indicate internally oriented cognition and externally oriented affective problem solving orientations are classified in category II, Androgyny, in the proposed problem solving model. People in this category are predicted to depend on internal referents in cognitive situations and external referents in affective situations. This category reflects an orientation most similar to the construct of androgyny.

Executive

People whose scores indicate internally oriented affect and internally oriented cognition problem solving orientations are classified in category 1, The Executive, in the proposed problem solving model. People in this category are predicted to depend on internal referents in both affective and cognitive

contexts. This category reflects a traditional, stereotypical masculine orientation.

Externally Oriented Affect

An externally oriented affective person depends on external referents to make decisions which have emotional importance, such as decisions about family or personal relationships. People having this quality tend to value sentiment above logic and are very aware of others' feelings. For purposes of this study, a code type score, over the 30th percentile, on the Myers Briggs Type Inventory (Myers, 1962), of "Extroverted" and "Feeling" type is defined as externally oriented affect.

Externally Oriented Cognitive

Externally oriented cognitive people depend on external referents to make practical decisions. They are highly influenced by external information and opinions of others. For purposes of the study, a field dependent score, between 6 and 10, on the Group Embedded Figures Test, is defined as externally oriented cognitive (Witkin, Oltman, Raskin, & Karp, 1971).

Harmonizer

People whose scores indicate externally oriented cognition and internally oriented affective problem solving orientations are classified in category III, the Harmonizer, in the proposed problem solving model. People in this category are predicted to depend on external referents in cognitive contexts and internal referents in affective contexts. This category tends to represent a highly adaptive orientation.

Internally Oriented Affective

An internally oriented affective person depends on internal referents to make decisions which have emotional consequences. Individuals having this

quality tend to rely on logic and personal values, often more concerned with what is most fair and reasonable rather than the solution that would make the most people happy. For purposes of the study, an operational definition, a code type score, over the 30th percentile, on the Myers Briggs Type Inventory (Myers, 1962), of "Introverted" and Thinking" is defined as internally oriented affect.

Internally Oriented Cognitive

Internally oriented cognitive persons are people who depend on internal referents to make practical decisions. Decisions are based on internal values, information and perceptions. For purposes of the study, a field independent score, between 16 and 20, on the Embedded Figures Test (Witkin, Oltman, Raskin, & Karp, 1971), is defined as internally oriented cognitive.

Nurturer

People whose scores indicate an internal orientation in both cognitive and affective problem solving contexts are classified in category IV, the Nurturer, in the proposed problem solving model. People in this category are predicted to depend on external referents in both cognitive and affective contexts. This category reflects a traditional, stereotypical feminine orientation.

Assumptions or Limitations

This study is presented as a new theoretical orientation. As with any seminal research, results must be considered as tentative until other studies are conducted.

No assumptions are currently made as to the distribution of the problem solving orientations in the population. As the subjects are all university students, the results can not be generalized to the population at large.

Hypothesis

A .05 level of statistical significance must be reached for the following research hypotheses to be accepted:

1. Based on the proposed classifications, 1- The Executive, 2 - Androgyny, 3 - The Harmonizer, and 4 - The Nurturer, there is a relationship between cognitive problem solving orientation and the scores on problem solving discrimination indices.

2. Based on the proposed classifications, 1- The Executive, 2 - Androgyny, 3 - The Harmonizer, and 4 - The Nurturer, there is a relationship between affective problem solving orientation and the scores on problem solving discrimination indices.

Organization of the Study

Chapter I presented an introduction to the study of problem solving orientation and its relationship to sex role stereotypes, along with the theories of differentiation, type and gender differences in problem solving orientations, the statement of the problem, the significance of the study, and the hypotheses. Chapter II contains a review of the literature related to this study. Chapter III includes the methodology of the study, the instrumentation utilized, as well as a

discussion of the statistical analyses that were employed in this research. Chapter IV contains the results of the statistical analysis. Chapter V provides a summary, conclusions, and recommendations.

CHAPTER II

REVIEW OF LITERATURE

The concept that humans may differ in some systematic and categorical way is not new to psychology literature. Early philosophers first considered the possibility of these differences. Among the first theorists were Empedocles and Hippocrates (Hinsie & Campbell,1970; Hunt, 1944). Empedocles (Hinsie & Campbell,1970; Hunt, 1944) conceptualized human differences as related to the cosmic elements of air, earth, fire and water. Hippocrates (Hinsie & Campbell,1970; Hunt, 1944) offered the first clear attempt to relate differences in the emotional basis of personality or temperament to differences in what today would be called biochemistry. He perceived a correlation between the four humors of the body and Empedocles' four elements (Hinsie & Campbell,1970; Hunt, 1944). Blood corresponded to air and produced the Sanguine temperament or a person of great enthusiasm due to the strength of the blood. Black bile corresponded to earth and in too great a proportion created the sad disposition of Melancholic. The Choleric, or irritable temperament, was due to an imbalance of yellow bile, the correspondent to fire. Lastly the element of water and its humor, phlegm, generated the Phlegmatic or apathetic temperament. Studies on the sources of temperament have progressed from the humors, to body type, to innate, to experiential, and in some part to gender as the source (Keirsey & Bates, 1978).

The search for a systematic method of description of personality is found in the studies of temperament and type. Temperament is defined as a constitutional tendency to react to one's environment in a certain way (Keirsey & Bates, 1978). Type is defined by Webster (1984) as a number of individuals thought of as a group because of a common quality or qualities. The theories most related to this current study are Jung's (1921) writings on type and the work of Myers-Briggs (1962, 1976) on temperament. Witkin's work in differentiation theory and style differences also offers a categorical system for personality. While Gilligan (1977, 1979, 1982) did not propose a theory of type, her work in the perceptions of women has been instrumental in reporting the inadequacy of current epistemological and developmental theory in the issue of primarily male research subjects. She introduced the inclusion of attitudes in regards to relationships as a critical element in the examination of moral decisions, heretofore ignored in the literature. Students of her work, Belenky, Clinchy, Goldberger and Tarule (1986) have used her impetus to develop a model of epistemological, developmental stages for women. Their consideration of both the intellectual and affective elements of decision-making make their writing also worthy of review.

This chapter presents a review of literature on differentiation theory, Jungian typology, and the Myers-Briggs Type Indicator. This is followed by a summary of Gilligan's perception model and its impact on women's decision making. These perspectives were integrated into a proposed problem solving orientation model.

Field Dependence/Differentiation Theory

Witkin (Witkin, 1978; Witkin et. al., 1962; Witkin & Goodenough, 1977;

Witkin et. al., 1979; Witkin & Goodenough, 1981), the originator of differentiation theory, was a leader in the search to identify stylistic differences among people in perceptual and cognitive function and a less value-laden conception of individual differences. His research began in the area of perceptual discrimination. His earliest experiments dealt with the Rod and Frame Test and the Tilted Room Test. He first introduced the concept of field dependency to describe the effects of the tilted visual field. As his research progressed he found a similar style or trait in the ability to disassemble a simple figure from a complex pattern. This led to the development of the Embedded Figures Test (Witkin et. al.1971), which is one of the most accepted tests for field dependency. In 1962, he defined field independence as the capacity to overcome and analyze an embedded concept in perceptual functioning (Korchin, 1986).

Over the course of his research, field dependence has primarily been conceptualized as a cognitive capacity. Informally, Witkin began to realize that as his research progressed he was able to predict whether a subject might be field dependent or independent from the short interpersonal exchange during the experiment (Goodenough, 1986). This observation introduced the notion that there may be consistent interpersonal traits associated with field dependency (Goodenough, 1986).

The conception of field independence began to expand into the broader perspective that it represented a more general orientation, allowing a person to function without being affected or distracted by the changing visual field found in the tilted room experiments or the ever changing social world in interpersonal behavior. In 1981, field dependency was again redefined as a

dimension of autonomy, or self/non-self differentiation expressed in upright perception and in social functioning (Witkin & Goodenough, 1981).

As originally defined in 1962, differentiation theory, field dependence/field independence, was conceptualized in the following model (see Figure 3). Development of differentiation was seen as an organismic wide process, with greater or lesser differentiation resulting in some pattern of consistency across domains (Witkin et. al., 1979).

Differentiation

| Articulated cognitive functioning | Articulated body concept | Sense of separate identity | Structured controls and specialized defenses |

Figure 3. 1962 differentiation model.

Note. From "Psychological differentiation: Current status." Witkin, H. A., Goodenough, D. R., & Oltman, P.K. (1979). Journal of Personality and Social Psychology, 37, 1127-1145.

As the concept became more refined, differentiation is viewed as standing at the apex of a conceptual pyramid, with its qualities being defined by lower order constructs (See Figure 4). At the level immediately below the apex are the three major indicators of differentiation; self/non-self segregation, segregation of psychological functions, and segregation of neurophysiological functions. Field-dependence/independence is located under the self/non-self segregation construct and seen as a bipolar process variable conceived to reflect the extent of autonomy from external reference. Segregation of psychological functions, the second major indicator of differentiation, is

manifested in structured controls and specialized defenses. Thirdly, the
indicator segregation of neurophysiological functions encompasses the
construct of lateralization of cerebral functions (Witkin et. al., 1979; Witkin &
Goodenough,1981). This discussion concentrates on the concept of self/non-
self segregation as it is seen in restructuring skills and limited interpersonal
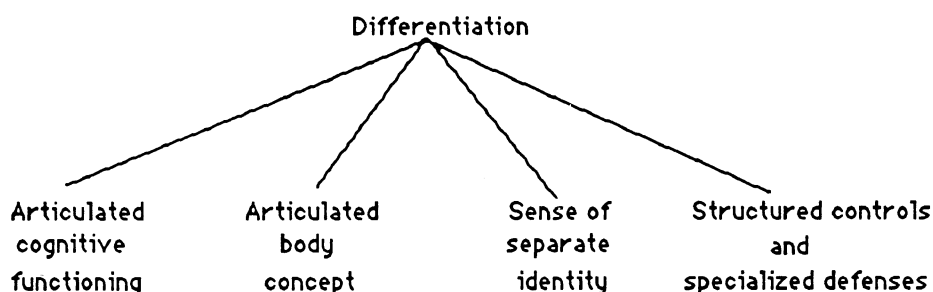competencies.
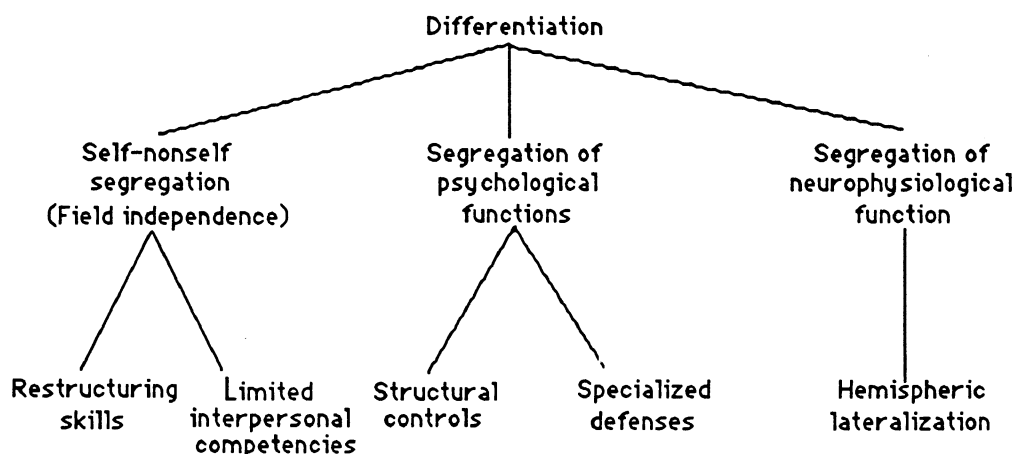
Figure 4. 1979 differentiation model

Note. From "Psychological differentiation: Current status." by Witkin, H. A., Goodenough, D. R., & Oltman,
P.K. (1979). Journal of Personality and Social Psychology, 37, 1127-1145.

Self/non-self segregation is a manifestation of autonomy as defined by a
source of perceptual references, body concept and influence of external
influences (Witkin et. al., 1962). This sense of autonomy is measured by the
bipolar construct of field dependent versus field independent, which is central to
the theory of differentiation. Field-independent and field-dependent people are
distinguished by their performance on perceptual tasks. Field-dependent
people depend on external reference to achieve solutions and field-
independent people utilize internal reference. This source of perceptions

impacts two general categories of behavior, restructuring skills and interpersonal competencies.

Restructuring skills relate to a cognitive process of reorganizing information to attain a solution or explanation. While originally envisioned to cover cognitive or intellectual function in a moie global sense, in more recent years the cognitive aspect was limited to tasks dealing with restructuring. Other skills, such as some verbal functions, were no: found to be as clearly correlated to restructuring skills as were once thought.

Cognitive style, as it relates to the model, has been the primary topic of research in the area of field dependence/field independence. Judgments are related only to the concept of style or of manner of moving toward a goal, and not ability or competence, in reaching the goal (Witkin & Goodenough, 1981). Still, a strength in a variety of cognitive capacities is traditionally associated with field independence.

In contrast, interpersonal skills often are associated with field dependence (Witkin & Goodenough, 1981). As was noted earlier, speculation that the field dependent/field independent dichotomy might manifest itself in interpersonal behavior was first made due to informal interaction with research participants. The majority of studies on the interpersonal manifestations of field dependency have been correlational, with the subject first being designated as field dependent or independent based on a cognitive restructuring type task and then observed or compared for interpersonal style.

There have been studies particularly designed to attend to the difference in interpersonal style which confirmed an interpersonal style consistent with the cognitive style. Interpersonal style was operationally defined by the use of social referents. In small groups, subjects were asked questions related to the

evaluation of perceptual information. In each group some of the members were confederates who were intentionally added to try to influence group members (Antler, 1964; Balance, 1967; Rosner, 1957; Wachman, 1964). Consistent with the projections, field dependent persons were more susceptible to group influence then those subjects who had been identified as field independent. This same pattern of influence also was present when there was not a confederate involved (Witkin & Goodenough, 1977). Witkin et. al., (1977) research in the area involved the use of dyads. The dyads, containing at least one field dependent member, resolved a problem conflict more quickly.

While the subjects were placed in an interpersonal situation, a small group, they were asked to make a cognitive style judgment. This does not seem to be a pure reflection of interpersonal judgment. Rapaczynski et. al., (1979) questioned whether the results would have been as consistent if the task had not involved cognitive restructuring.

As defined by current differentiation theory, a greater individual autonomy, field independence, is associated with cognitive restructuring. A greater reliance on external reference, field dependency, is associated with a set of interpersonal competencies. As conceptualized by Witkin, Goodenough and Oltman (1979), there is a paradox in restructuring and interpersonal skills, with the development of one seen as responsible for the lesser development of the other. In other words, people invest in only one domain dependent upon their field dependency or independency. Other followers of the differentiation theory, such as Lewis (1986), have proposed that it may be more facilitative if a distinction were made between the two meanings of the non-self. She notes that one function related to inanimate objects, cognitive restructuring, and the other to emotionally significant others, interpersonal competencies. Lewis

suggested that this apparent inability to be strong in both areas has been a traditional argument for the differences in the sexes (women more caring, men more logical) and that as social roles change, more of a balance will be required in both sexes.

Witkin & Goodenough (1981) comment on the possibility that one person may possess strengths in both areas. Witkin & Goodenough (1981) stated: While the tendency for people to be relatively high in restructuring skills and low in interpersonal skills, or conversely, to be relatively low in cognitive restructuring skills and high in interpersonal competencies are the patterns commonly found, the magnitude of the inverse relationship between restructuring and interpersonal competences is sufficiently low to allow for the possibility that these are not the only ones (pg. 62).
He continues that the ability to maintain both skills does allow for greater flexibility and, as such, provides a better model for living. He proposes further research into the extent that these skills may be learned and fostered simultaneously.

There is some evidence that autonomy and self-segregation, field independence, may be the result of child rearing practices that emphasize gaining independence from parental control (Carli, Lancia, Paniccia, 1986; Piaget, 1981; Witkin & Goodenough, 1981). Traditional parenting expectations for boys generally foster a greater sense of independence while traditional parenting for girls often encourages dependence and mutual support (Birns, 1976; Carew & Lightfoot, 1979; Fagot & Patterson, 1969.

Psychological Type

Jung (1921) offers one of the most complete analysis of the human

experience. Although it would be impossible to offer a complete summary of his approaches to the concept and development of the human personality, a few comments will be made in the way of an introduction to a more complete discussion and review of his theory of psychological type, the area most germane to this research.

Jung, (Jung, 1965; Hall & Norby, 1973) a student of Freud, was profoundly influenced by Freud's concept of the unconscious. In later years he broke from strict Freudian tradition with the introduction of his theory of archetypes, or an inherited idea or mode from within the collective unconscious rather than from life experiences. His theory includes subtle differences from that of Freud. A difference that is relevant for this study was Jung's perception of the Libido as a general life force energy, rather then a force limited to sexual repression and expression. While not accepting the clear delineations of the id, ego and superego, Jung attributed to the unconscious some structural components in the forms of complexes and archetypes. He also believed the unconscious to be more accessible to humans who by disposition and conscious intent were open to its influence (Hall & Norby, 1973).

Jung (1921) advocated that a system of classifications of basic temperaments would add objectivity to the study of psychology by serving a useful purpose for research, discussion and mutual understanding. Systematic categorization of personalities had practical application in counseling, particularly in marital counseling when helping spouses understand their mates' perspectives . This categorization served as a more effective structure to understand the choice of neurosis, as Jung was dissatisfied with the explanation provided by Freud (Jung, 1921). Over the course of his work he began to explore a fundamental difference in the way humans approached life.

At first he conceptualized the difference as active versus inactive, then, reflective versus unreflective, and lastly, as extroverted versus introverted (Jung, 1921). These two distinctions are known as attitudes or an essential bias which conditions the whole psychic process, establishes a habitual mode of reaction, and thus determines not only the style of behavior but also the quality of the subjective experience (Jung, 1921). As noted in Chapter I, extroversion is characterized by a positive relationship to the object and introversion by a negative relationship to the object. A primary difference in the two orientations is the movement of the Libido. The extrovert gives his/her whole interest to the outer world, to the object, and attributes an extraordinary importance to it. When the objective shrinks into the background and the flow of energy is to his/her own subjective psychic structures and processes, it is a case of introversion (Jung, 1921).

While every person is thought to possess each of these qualities, rarely, if ever, are they found in uniform proportions. As a rule, one is the foreground and one remains undifferentiated in the background. In other words, one will be the primary mode of the conscious mind and under conscious influence, while the other will function somewhat unrestrained in the unconscious (Jung, 1921).

After having published his first paper on these attitudes, Jung (1921) discovered that while people could be classified by these two categories, they did not account for the tremendous differences in people in the same category. Upon further investigation, he introduced the four functions, or the means by which the conscious obtains its orientation to experience. The four functions form two dualities in the sense that each member of the set cannot function simultaneously. As with the attitudes, all are present but one of each pair is the dominant. Thinking and feeling form the rational functions and serve to

discriminate and evaluate. This is in contrast to the irrational, or strictly perceptive functions, of sensation and intuition (Jung, 1921).

Thinking consists of connecting ideas with each other in order to arrive at a general concept or solution to a problem. Thinking is an intellectual function that seeks to understand things. It is paired with feeling, which is also an evaluative function. Feeling either accepts or rejects an idea on the basis of whether the idea arouses a pleasant or unpleasant feeling. Sensation is a sense perception which compromises all conscious experiences produced by stimulation of the sense organs--sights, sounds, smells, touch as well as sensations originating inside the body. Intuition, similar to a sensation, is an experience which is immediately given rather than produced as a result of thought or feeling. Intuition differs from sensation in that the person who has an intuition does not know where it came from or how it originated. "The essential function of sensation is to establish that something exists, thinking tells us what it means, feeling what its value is, and intuition surmises whence it comes and wither it goes" (Jung, 1921, p. 553).

The functions continue with the attitudes to create the eight Jungian temperaments. Each combination includes an attitude and a primary function. These are the two most significant influences in the thoughts, values, and perceptions of the person. While the primary function has the most influence, there does seem to be a co-determining function called the auxiliary function. The auxiliary is conscious, or under the control of the will, like the primary function. Because the functions exist in dichotomies, a primary function cannot have its mate as the auxiliary. In other words, if a rational function serves as a primary function it will have one of the irrational functions serving as the auxiliary. The remaining functions, not serving as primary or auxiliary, will exist

in an archaic, animal state in the unconscious (Jung, 1921). A brief description of the types follows.

Extroverted Thinking. The extroverted thinker's life is oriented toward objective reality. All decisions on good and values are based on a critical, logical formula of truth. Information that conforms to the formula is good, and any information that conflicts with the formula is bad. Not only do extroverted thinkers live their lives by this rule, but so must those who surround them. Extroverted thinkers may appear to be humanitarians to the outside world and tyrants to those closest to them, showing a driven passion for a project or charity, a phenomenon resulting from the suppressed, unconscious feeling function (Jung, 1921).

Extroverted Feeling. Jung (1921) believed this type was found most often in women. For the extroverted feeler, feelings become an adjusted function under conscious control. Emotions tend to be in relation to external objects. Extroverted feelers may appear calm and in complete harmony with life at one moment and in a rage the next. This same exaggerated pattern can be seen in love relationships that are filled with passion at one moment and as strong a distance when the relationship ends. Extroverted feelers avoid thinking, yet they can be very logical until the logical conclusion disrupts the emotion (Jung, 1921).

Extraverted Sensation. The world of the extroverted sensor is strongly grounded in the real and tangible. Theirs is an existence intensely tied to objective reality and concrete experience. They often are admired for this realist quality. A flaw in the orientation of an extroverted sensor is that the same skill which serves them so well in the face of rational experience is applied with the same diligence to irrational, chance happenings. Extroverted sensors are

thrill-seekers with a zest for living, giving little time to reflection and introspection (Jung, 1921) .

Extroverted Intuitive. Unlike the extroverted sensor who lives for the here and now reality, the extroverted intuitive is oriented to the new and possible. While new and changing situations are greeting with great enthusiasm, the enthusiasm may be short lived when the situation becomes stable. Interest is difficult for the extroverted intuitive to maintain over time, as thinking and feeling, the components of commitment, are their least developed functions (Jung, 1921).

Introverted Thinker. Introverted thinkers value the intensity of critical thought, rather than the extent of the extroverted thinker. Their ideas have an objective base like the extrovert, but in a subjective foundation. Problems are thought through, even to the point of making them more complicated. With this intense absorption in the idea, an introverted thinker may drop the idea on others and never understand why they did not accept it unquestioningly. They often are seen by others as dominating and inconsiderate, or perhaps unapproachable and arrogant. This arrogance comes from the unconscious need to protect against feeling (Jung, 1921).

Introverted Feeler. Jung (1921) found those of this feeling type also to be more common in women than men. Jung described them as inaccessible and difficult to contact. They often are inconspicuous, with a outward appearance of calm, until an emotional storm erupts to the surprise of those around them. Feelings are subjective and felt with great intensity. This internal, inaccessible emotionality can be a strong attraction to others. They have been described as casting a spell on the those around them (Jung, 1921).

Introverted Sensation. Introverted sensors also are drawn to the intensity of the moment, like extroverted sensors, but the reward in is the subjective sensations. This can be seen in highly contradicting behavior that vacillates between calm and excitation in a seemingly arbitrary fashion to the casual observer. Immersed in the internal experience, they can be easily abused, but when aware, have a gift at identifying the underlying intentions (Jung, 1921).

Introverted Intuitive. Introverted intuitives are subject to the most misunderstanding. They often are referred to as dreamers and cranks. Life is guided by an instinctive, subjective reality. They often find the moral concerns of others as unintelligent or even absurd. This emphasis on their personal subjective can make them aloof and disinterested in others (Jung, 1921).

Myers-Briggs Type Indicator

Isabel Briggs Myers (1962, 1976) and Myers & Myers (1980) does not offer a formal, unique personality theory. Inclusion here is due to the practical explanation and application of Jungian Type theory and the development of the Myers-Briggs Type Indicator (Myers, 1962).

Isabel Briggs Myers' mother, Katherine Briggs, first developed an interest in type, and through thoughtful observation, began to develop a system of categories that represented the various approaches of humankind. Soon after she discovered the writings of Carl Jung (1921) she learned that his theory was compatible to hers, yet more thorough and well defined. She began a personal study into type and its application. This was an interest she shared with her family, especially her daughter, Isabel. Impacted by WWII and hoping to foster a method for world understanding of differences, Isabel began her work to

develop an instrument to assess type. She had had no formal training in psychology nor statistics, yet she read and applied the laws of psychometric test development to her studies. The result of her work was the Myers-Briggs Type Indicator (MBTI) (Myers, 1962).   Though not well received by the professional psychology community, it is quickly becoming one of the most commonly used instruments with non-psychiatric populations (Myers & Myers, 1980).

While the MBTI is based on Jungian Type theory and for the most part is highly consistent with it, there are three areas of apparent differences. The most obvious is the inclusion of what seems to be a fourth and new dualistic dimension of Judging versus Perception. In reality, this is merely a formal notation of the preference often referred to by Jung in terms of rational and irrational types. For Jung (1921), rational types were those persons who preferred to use the thinking or feeling functior over some form of perception. In contrast, the rational types were those who preferred to use the perceptive functions, sensation versus intuition.   Jung (1921) also alluded to the fact that one of these functions will be dominant. The inclusion of the judging and perception dichotomy in the code type identifies which function is the dominant function. Adding this dimension served to split Jung's eight Types into two manifestations of the dominant function, resulting in sixteen types. These types are delineated in the Type Table (Figure 5). For a description of each type see the Report Form for the Myers-Briggs Type Indicator (Appendix A).

A second area where Myers' (1962, 1976) and Myers & Myers (1980) approach differs from Jung's is to more fully expand and examine the impact of the auxiliary function. While Jung does state that the non-dominant function serves as an auxiliary, he limits his discussions of behavior to the manifestation

of the dominate type (Jung, 1921). In general, Jung (1921, pg. 346) limits his discussion to that of "pure" Types which he says rarely exist.

		SENSING TYPES		INTUITIVE TYPES			
		¥/ THINKING	¥/ FEELING	¥/ FEELING	¥/THINKING		
INTROVERTS	JUDGING	ISTJ Introverted Sensing w/ thinking	ISFJ Introverted Sensing w/ feeling	INFJ Introverted Intuition w/feeling	INTJ Introverted Intuition w/thinking	JUDGING	INTROVERTS
	PERCEPT	ISTP Introverted Thinking w/sensing	ISFP Introverted Feeling w/ sensing	INFP Introverted Feeling w/intuition	INTP Introverted Thinking w/intuition	PERCEPT	
EXTROVERTS	PERCEPT	ESTP Extraverted Sensing w/ thinking	ESFP Extraverted Sensing w/ feeling	ENFP Extraverted Intuition w/ feeling	ENTP Extraverted Intuition w/thinking	PERCEPT	EXTROVERTS
	JUDGING	ESTJ Extroverted Thinking w/sensing	ESFJ Extroverted Feeling w/sensing	ENFJ Extroverted Feeling w/ intuition	ENTJ Extroverted Thinking w/intuition	JUDGING	

Figure 5. Myers-Briggs Type Table.

Note. From Myers, I., & Myers, P. (1980) Gifts differing, Palo Alto: Consulting Psychologist Press.

Myers & Myers (1980) provide a thoughtful look at the impact, the positive balancing, of the auxiliary function. This lack of discussion by Jung of the auxiliary function is most clearly seen in the understanding of the introverted type. Myers' third contribution to understanding Jung's theory is to examine the role of extroverted auxiliary function in introverts. As previously noted, Jung's comments on the manifestation of the auxiliary process are cryptically brief. As a result, many readers of Jung have assumed that both the dominate and auxiliary functions of the introvert are introverted, which leaves a rather bleak picture of introverts' ability to interact in the world (Myers & Myers, 1980). Closer examinations indicate that while the dominant function is introverted, or

practiced in the favorite sphere, the auxiliary is extroverted, thereby providing the introvert with a connection to the world (Myers & Myers, 1980).

The work of Myers (1962, 1976) and Myers & Myers (1980) and the development of the MBTI (Myers, 1962) have released Jung's (1921) theory from a mere theoretical perspective to a practical and useful tool in the understanding of human nature. Her descriptions of the attitudes, functions and preferences, in terms of behavior and in common language, have provided a tool useful to counseling, education, and any area that utilizes the strength of human differences.

<div align="center">Perceptions</div>

Gilligan (1979) recognized the potential for bias in much of the current theory and research of moral decision-making and development. In many, if not most, cases, women subjects have been missing from the research in the formative stages of psychological theory development. When women were addressed, it was often in terms of how women conform or diverge from the traditional patterns found in the study of men. Developmental theory based on the experience and values of men has often led to the detriment or misreading of women. Those areas most slighted in the research include the development of interdependence, intimacy, nurturance and contextual thought (Chodrow, 1978; Gilligan, 1977, 1979, 1982).

Gilligan (1982) used Kohlberg's (1981) research on the development of moral reasoning as a basis for comparison. She argues that a perspective which values connected and contextual thinking, which most often is held by women, is a different mode of resolving moral conflicts rather than an inferior one. She describes two separate modes of resolving these problems, modes

not characterized by gender but by theme. The mode most often expressed by women is one of connectedness and even a fear of separateness (Gilligan, 1979). In contrast, men most often exemplify a mode of separateness where the connection was the fear (Gilligan, 1979). For women, moral decisions were based on the impact the decision would have on relationships rather than simple analytical logic. These desperate fears of being stranded or being caught give rise to different portrayals of achievement and affiliation, leading to different modes of action and different ways of assessing the consequence of choice. Gilligan found the morality of women to be based in themes of responsibility and care, in contrast to the morality of rights found in the work of Kohlberg (1981) and Piaget (1981), which is based on the study of men's and boys' reasoning.

Gilligan and her colleague, Lyons (1983) have begun to frame these differences not as gender related, but with definition of identity as the source. They found this theme of responsibility to be found in those who defined their identity in terms of connectedness and relatedness to others. The theme of rights showed a similar commonalty to those whose identity was in terms of separateness and autonomy.

Inspired by the writings of Gilligan, Belerky, Clinchy, Goldberger and Tarule (1986) conducted a five-year study into the perspectives from which women view reality and draw conclusions. They share the concern raised by Gilligan that women have not been represented in the traditional studies of developmental or epistemological psychology. Their intent was to define those perspectives unique to women's experience. While their research was not structured in a formal design, they did follow the spirit of research structure. Their sample was large and diverse, coming from a cross section of educational

and economic backgrounds. Interview questions were carefully structured and evaluated by objective standards used in past research efforts. The analysis resulted in a description of five perspectives of how women view the value of their own thought and feelings.

How valuable and accurate women perceive their thoughts and feelings to be is pivotal to each perspective. The power women see as their own or others most clearly delineates the perspectives. Belenky, Clinchy, Goldberger, & Tarule (1986) found that the way women described themselves was often in terms of voice and silence. They cite examples of commonly used phrases such as "speaking up," "not being heard," "saying what you mean," and "really listening." (Belenky, Clinchy, Goldberger, & Tarule, 1986, p. 18) The order in which the perspectives are described is qualitative and developmental.

Silence . If the perspectives could be seen as parallel to a sense of self in terms of competency and value, this group of women would be characterized as having no sense of self worth. They represented the extreme in denial of self and in dependence on external authority for direction. These women shared a common history of violence and of being devalued for most came from a home where one parent was brutally aggressive and one was silent. Theirs was a life of passive reactiveness and dependency. Life often was seen in polarities where only one may win and the other must lose. They had resigned themselves to the place of the loser. Silent women saw themselves as having no voice nor was there one in their behalf (Belenky et. al., 1986).

Receiving Knowledge. Receiver women had begun to recognize the relationship of power and knowledge and saw words as central to knowing. For this group, the source of this knowledge was external and they often would look to others as a source of self knowledge. In response to a request to

describe herself, one interviewee responded, 'I don't know, no one has ever told me" (Belenky et. al., 1986, p. 31). These women were less likely to see self as separate from they. Nor did they see themselves as growing or changing. They spent much of their time doing for others. Truth should be clear and unchanging for receivers. Being literalist, they are intolerant of ambiguity, and theirs is a world of shoulds and oughts. Discovering that doing all the things one should do does not guarantee happiness propels many receiver women into the next perspective.

Subjective Knowledge

For many women there was a path from silence to a protesting inner voice, to an infallible gut instinct. At the place where a woman begins to have complete faith in her inner voice, she was demonstrative of the subjective knowledge perspective. This level still represents a form of dualistic thinking with only one true answer. However, the source of that truth shifted from external to internal. These women valued subjective and intuitive knowledge, for which they often paid a price in a society that values rationalism and scientific thought. For many, life was now a question of ". . . going it on their own" (Belenky et. al., 1986, p. 79). Truth was a personal and private thing. Often they expressed a distrust of logic, analysis, abstraction and even language itself. Subjective knowledge women distinguished between truth as a feeling which came from within and ideas as something that came from without.

Procedural knowledge

The largest percentage of college educated women were found in the group representative of procedural knowledge. Almost all described a common experience of having been forced or led away from their natural tendency of subjectivism. They had abandoned subjectivism and absolutism for reasoned

reflection. For most, it was not in an effort to move beyond their subjectivism, but to defend it. They had begun to engage in conscious, deliberate, and systematic analysis. For them, knowing required careful observation and analysis. This careful pondering was exemplified in their speaking in measured tones. In some matters they found truth to be intuitive, personal and essentially incommunicable. Theirs was a more complex world than that of the receiving or subjective perspectives.

Constructed knowledge

Belenky et. al., (1986) found the final perspective to be the highest level of functioning. The women at this level were able to integrate what they felt intuitively with the knowledge of others. No longer viewing the world from a dualistic perspective, answers to all questions varied depending on the context. They were not willing to rely on hypothetical-deductive inquiry, but examined assumptions and conditions in which the problems were cast. They were described as passionate knowers. Constructivists wove their passions and intellectual life into some recognizable whole. They were most successful in balancing personal/professional and family needs. They were described as being a refreshing mixture of idealism and realism.

Summary

Witkin's (Witkin, 1978, Witkin, Oltman, Raskin, & Karp, 1971, Witkin & Goodenough, 1977, Witkin & Goodenough, 1981) research in differentiation theory developed a comprehensive model of the personality. Central to his study was the concept of field dependency. Field dependency describes the

manner or style with which one approaches a goal or decision. In the case of field independency, the emphasis is on the internal or personal thoughts, evaluations, and values and associated with a strength in cognitive skills. Field dependency is an orientation or susceptibility to external information and was associated with strong interpersonal sensitivity or skills. As the research progressed, Witkin identified a trait or quality he called mobility. Mobility represented an ability to change orientations based on the situation. Witkin's research ended without identifying a pattern to the mobility. This study proposes that mobility follows a consistent pattern based on context.

Jung's (1921) concept of temperament offered another systematic categorization of patterns with which people approach problems. Jung conceptualized the essential bias or attitude which conditions the whole psychic process, as introversion versus extroversion. Introverts' orientation was internal, with the emphasis on their own psychic experience. In contrast, the extrovert is invested in the outer world. How this attitude or bias was manifested was determined by the functions, thinking versus feeling and intuitive versus sensing. Thinking and feeling, the rational functions, serve to evaluate and discriminate and are most relevant to problem solving. A person whose primary function was thinking would make decisions based on an analytical mode. If feeling were the primary function, decisions were based on the emotional response around the options.

The thinking/feeling dichotomy shares many common adjectives with the masculine/feminine stereotype dichotomy. The combination of the attitudes, introversion and extroversion, with the rational functions, thinking and feeling, would create a framework similar to the problem solving model proposed in this study.

The work of Myers (1962, 1976) and Myers & Myers (1981) serve to provide a more understandable presentation of Jung's(1921) temperament theory. The Myers Briggs Type Inventory (Myers, 1962), which identifies types, has provided a method of application for the theory.

Gilligan's (1979) research has introduced the consideration of an affective orientation to the research in developmental and epistimelogical psychology. The exclusion of women subjects from the research studies in these areas have lead to traditional female value systems and cecision making modes being classified as inferior. More specifically, women often advocate a decision making process which values connectedness and contextual thinking, an orientation seen as inferior in Kohlberg's (1981) classic studies in moral reasoning. Gilligan's work supports the consideration of an affective orientation as a dimension of problem solving.

Belenky, Clinchy, Goldberger and Tarule (1986) attempted to define perspectives unique to women. The perspectives are defined in terms of how women viewed the value of their own opinions and the opinions' of others. The women characterized as silent felt they had no voice themselves, nor would anyone speak in their behalf. Receiving knowledge was characteristic of a group of women who saw all knowledge and knowing as external to themselves. The women representative of subjective knowledge began to recognize a highly subjective inner voice to the point that external knowledge was seen as negative. Procedural knowledge included women who felt they had been forced from the subjective knowing to a more logical, analytical way of thinking. The final perspective, constructed krowledge,represented the highest level of functioning. At this level women were able to integrate what they felt intuitively with the knowledge of others.

While Belenky, Clinchy, Goldberger, & Tarule's (1986) work emphasized the affective elements of decision making, there are similarities between their model and the model proposed by this study. The perspective of silence is seen as an underdeveloped or impaired orientation, leaving the four remaining perspectives as functioning orientations. Receiving knowledge is compatible with the Nurturer, each concentrates on external sources of information. Subjective knowledge shares some of the qualities of the Harmonizer, having an inner personal orientation that is suspicious of the rational and logical. Procedural knowledge and the Executive are analytical and logical. Constructed knowledge and Androgyny utilize logic and reason tempered with passion.

This chapter presents a review of the literature in the areas related to this study. Theories related to typology and differentiation and their application to perception and decision-making style are cited. New models of decision making based in affective considerations were introduced. The integration of these theories supports the hypothesis that a problem solving orientation is not a simple dichotomy, but exists in four possible orientations. These orientations are based on the interaction of problem context and source of reference.

CHAPTER III

PROCEDURES AND INSTRUMENTS

Chapter III includes information related to the research design and statistical considerations. Sections include a description of the subjects, instruments, design and procedure, and the statistics that will be used to analyze the data.

Subjects

Subjects were drawn from the campus of a mid-western, private, liberal arts university. An original sample of 198 students were screened in Phase 1 to identify at least five subjects who were most representative of the four proposed problem solving orientations, the Executive, the Nurturer, Androgyny and the Harmonizer. A total of 21 subjects comprised the sample for Phase 2 of this study. Only students over the age of 18 were used, as it has been shown that both the qualities of field dependence/field independence and type and their corresponding scores on the chosen instruments tend to be stabilized and consistent after the age of 18 (Witkin & Goodenough, 1981, Myers, 1962). A demographic breakdown of the subjects is presented in Table 1. A minimum of five subjects were identified to represent each of the four categories for statistical purposes. There is no assumption that the four orientations are equally distributed in the population. As this is seminal research designed to

establish the hypothesis that the four proposed categories of problem solving orientation do exist, the design did not utilize random sampling nor random assignment to categories.

Table 1

Demographics of Subjects

| | Phase I | | Phase 2 | |
	M	F	M	F
Mean Age	22.56	23.29	24.29	20.86
Gender	77	121	7	14
Classification				
Freshman	15	29	3	5
Sophmore	12	18	3	3
Junior	27	38	0	2
Senior	21	36	0	4
Graduate	2	0	1	0

Instruments

Three instruments were used in this study. The Group Embedded Figures Test (Witkin, Oltman, Raskin, & Karp, 1971) was used to establish cognitive internal versus external orientation. The Extroversion/ Introversion and Thinking/Feeling scales of the Myers-Briggs Type Indicator (Myers, 1962) were used to indicate the affective external versus internal orientation. The Problem-Solving Orientation Test developed for this study, was used to measure

problem solving style. The following sections provide a description of these instruments.

Group Embedded Figures Test (GEFT)

The Group Embedded Figures Test (GEFT) (Witkin, Oltman, Raskin, & Karp, 1971) was designed to provide a group administered version of the originally individually administered Embedded Figures Test (EFT). All forms of the EFT are perceptual tests. More specifically they are designed to test the perceptual function as it relates to a cognitive style. As it is used for this study, cognitive style refers to, ". . . the characteristics, self-consistent modes of functioning which individuals show in their perceptual intellectual activities" (Witkin, Oltman, Raskin, & Karp, 1971, p. 3). The GEFT consists of 18 complex figures, 17 of which were taken from the EFT. The subject is asked to find one of eight simple forms embedded in the more complex forms. Scores fall on a continuum of field independent, represented by higher scores (16 to 20), to field dependent, represented by lower scores (6 to 10) (Witkin, Oltman, Raskin, & Karp, 1971).

Reliability. As the GEFT is a timed test, parallel forms of the test were used to establish reliability. Correlations between the first and second forms of the test, corrected by the Spearman-Brown prophecy formula, produced a reliability estimate of .82. This reliability prediction is based on the norms established on men and women college students from an eastern liberal arts college (Witkin, Oltman, Raskin, & Karp, 1971).

Validity. The validity of GEFT has been examined in two ways, in relation to its parent form, the EFT, and to other measures of psychological differentiation. The correlation between the GEFT and EFT ranges from -.63 to -.82. Correlations with the EFT and Portable Rod and Frame Test should be

negative as these tests are scored in reverse fashion. There also is a substantial correlation, .55 to .71, between the scores on the GEFT and the a scale used to assess articulation of body concept using the human figure drawing (Witkin et al., 1962). A weaker correlation has been found between the GEFT and Portable Rod and Frame Test, ranging from -.34 to -.39 (Witkin, Oltman, Raskin, & Karp, 1971).

Myers- Briggs Type Indicator (MBTI)

The Myers-Briggs Type Indicator (MBTI) was designed as a self-report inventory to identify Jung's typology in an individual (Myers, 1962). The MBTI contains separate indices for determining each of the four basic preferences which structure the personality. These indices include preferences for extraversion (E) versus introversion (I), sensing (S) versus intuition (N), thinking (T) versus feeling (F), and judgement (J) versus perception (P). Individuals receive a four letter code representing their type formulas. The MBTI is a self-administered paper and pencil, forced-choice test consisting of 126 items (Myers, 1962).

Reliability. As type is conceptualized as a developmental process, and therefore may change over time, a split-half method of reliability is most appropriate. Each index was split and compared to its other half. A Spearman-Brown prophecy formula was used to correct the correlation between the two halves. Reliability was calculated on a number of experimental populations in response to the developmental nature of the indices. Reported here is the coefficient for a group of liberal arts college students most like the subjects for the proposed research. The correlations ranged from .81 to .89 (Myers, 1962).

Validity. The manual of MBTI reports validity in terms of the MBTI correlation with other personality variables such as the Strong-Campbell

Interest Inventory (Strong, 1959), the Edwards Personal Preference Schedule (Edwards, 1959) and others (Myers, 1962). While the correlations are statistically significant, Anastasi (1982, pg.142) states that ". . . unless the new test represents a simpler or substitute for the earlier test the use of the latter is indefensible [for establishing validity]."

More recently, Thompson and Borrello (1986) established construct validity for the MBTI using factor analytic techniques. The factor analytic results suggest that the items are related to four factors in the expected fashion. The four factor adequacy coefficients were each greater than .95.

The combination I_T_ type formula was used to identify those subjects who appear to be internally oriented in affective problem solving and the type formula E_F_ was used to identify those representative of the externally oriented affective problem solving style. This determination was based on a content analysis of the description of these preferences. I_T_ and E_F_ are most similar to the proposed problem solving affective orientation styles. Holsworth's (1985) research, using a multiple regression analysis, showed a significant relationship between the scores obtained on the T-F indices and GEFT measurement of field dependency and independency. T was found to be related to field independence and F related field dependency. A GEFT rating of field dependent was even more likely if the individual score as E_F_. The research of Ellickson, Swain, and Forrest (1987), which proposes the T-F scale of the MBTI, may serve as a discriminator of Gilligan's inner and outer voice. Problem Solving Orientation Test II (PSOT II).

The Problem Solving Orientation Test II (PSOT II) (Appendix B) was designed for this study. It contains ten problem solving situations which represent a cognitive context and ten problem solving situations which

represent affective context. The Problem solving situations were presented orally and required an oral response. This allows for a more complete freedom of response. Subjects received two scores, one for cognitive orientation and one for affective orientation. These scores fall on a 1 to 10 scale with low scores representing external orientation and high scores representing internal orientation.

Pilot Study. A two-step process was used to establish the reliability and validity for the PSOT. Items originally were selected by a panel of experts to establish preliminary face validity. The panel consisted of a licensed psychologist with a PhD in Clinical Psychology, a licensed Psychological Examiner, with an MS in School Psychology and a therapist who is currently a student in a PhD Counseling Psychology program. This instrument was then administered to a group of subjects similar to those proposed for the study who were classified by the same independent variables.

The results of the validity study for the original forced choice version of the PSOT (hereafter referred to as PSOT I), indicated that all groups responded in a similar fashion. When reviewed by the researcher, it was discovered that the results of the forced-choice format reflected the similar final conclusions of each of the groups, but did not reflect the subjective process of arriving at the conclusions.

Items were rewritten into a verbally administered set of problem situations in which subjects had an opportunity to respond in an independent manner as to their process of solving the decisions. An inter-rater reliability correlation coefficient of .62 was established with a clear representation of the criterion groups (Anastasi, 1982; Spatz & Johnson, 1976). This version of the test is referred to as PSOT II.

Design and Procedure

This study consisted of four problem solving orientation groups of at least five subjects each (the category, the Harmonizer, had six subjects). Subjects were selected and placed in groups based on their scores on the GEFT (Witkin, Oltman, Raskin, & Karp, 1971) and MBTI (Myers, 1962). Subjects then were administered the dependent variable, the PSOT II, and categorized into inner oriented or outer oriented for cognitive and affective problem solving style.

In phase 1, each subject was given a packet of the test protocols, consisting of the GEFT (Witkin, Oltman, Raskin, & Karp, 1971), the MBTI (Myers, 1962), the PSOT, and a biographical information sheet (Appendix C), which were administered in groups in one setting. The GEFT was administered first as it is the only test which utilizes a time limit. Following the GEFT, subjects were asked to complete the remaining instruments at their own pace in the order in which they were found in the packet, the MBTI, the PSOT II, and a biographical information sheet. All of the test protocols were returned to the packet and given to the examiner.

Using the prescribed criteria, participants who could be classified into the four groups were invited to participate in phase 2. Each participant was seen individually to administer the PSOT II. Their answers were tape recorded. Answers were later transcribed to accommodate scoring. Five subjects were classified in the categories of the Executive, Androgyny and the Nurturer; six subjects were classified in the category of the Harmonizer.

Analysis of Data

Chi Square as a test of independence was used to investigate the hypothesis. Two separate 4 x 2 contingency tables were utilized.   In the investigation of Hypothesis 1, the columns were defined as Internal Cognitive and External Cognitive based on the results of the GEFT (Witkin, Oltman, Raskin, & Karp, 1971).The rows represented the four proposed classifications; the Executive, Androgynous, the Harmonizer, and the Nurturer. The observed frequencies were a result of Phase 2. In the investigation of Hypothesis 2, the columns were defined as Internal Affective and External Affective based on the results of the MBTI (Myers, 1962). The rows represented the four proposed categories, The Executive, Androgyny, the Harmonizer, and the Nurturer. The observed frequencies were a function of classifications from Phase 2.

	Cognitive Style				Affective Style	
	Inter	Exter			Inter	Exter
The Executive				The Executive		
Androgony				Androgony		
The Harmonizer				The Harmonizer		
The Nurturer				The Nurturer		

Figure 6. Chi square contingency tables.

Spatz and Johnson (1976) identify Chi Square as an appropriate technique for testing how well empirical frequency data fit a theoretical model. Rejection of the null hypothesis supports the alternative hypothesis that there is a relationship between internal or external orientation and contextual problem

solving. With expected frequencies of more than 5, the theoretical distribution of Chi Square is an accurate model (Spatz & Johnson, 1976). This also meets the criteria that contingency tables having more than 1 *df* must have expected values of greater than two (Linton & Gallo, 1975). Computations were completed by using the SPSS-X program for Chi Square. The significance level or Type I error for all statistical tests was set at the .05 level.

CHAPTER IV

RESULTS

Introduction

Results of the statistical analysis employed in the investigation of two hypotheses are presented in this chapter. The intent of this study is to identify four possible patterns of problem solving orientation based on the interaction problem context and source of reference.

Information regarding the problem solving is reported for the two conceptual domains, cognitive and affective. The results are reported in two separate Chi Square analysis. As an enumerative data statistic there are limited assumptions related to the use of the Chi Square. Chi Square is appropriate in the use of frequency data, as was the case in this study. Chi Square does not assume a normal distribution in the population. Chi square does require that each subject only be counted one time and that two should be the minimum for each expected frequency. Categories also must be set up by some logical classification. All these assumptions were met (Spatz & Johnson, 1976, Linton & Gallo, 1975).

Discussion of the Results

Participants were assigned to the four problem solving categories based on the score on the GEFT (Witkin, Oltman, Raskin and Karp, 1971) and MBTI (Myers, 1962) in phase 1 of the experiment. Those participants whose scores on the MBTI and GEFT met the classification criteria established for this study were then given the PSOT II. A 2x4 contingency table was used to analyze the relationship of the four proposed problem solving categories and scores on the PSOT II (See Table 2).

Table 2

Contingency Tables for Cognitive and Affective Domain

Cognitive Problem Solving

Problem Solving Model Classification	Inner	Outer	
The Executive	4 (2.86)	1 (2.14)	5
Androgeny	5 (2.86)	0 (2.14)	5
The Harmonizer	2 (3.43)	4 (2.57)	6
The Nurturer	1 (2.86)	4 (2.14)	5
	14	7	21

Affective Problem Solving

Problem Solving Model Classification	Inner	Outer	
The Executive	4 (2.86)	1 (2.14)	5
Androgeny	3 (2.86)	2 (2.14)	5
The Harmonizer	3 (3.43)	3 (2.57)	6
The Nurturer	2 (2.86)	3 (2.14)	5
	12	9	21

NOTE: All parenthetical figures represent expected values.

Hypothesis 1. Based on the proposed classifications, 1- The Executive, 2- Androgyny, 3- The Harmonizer, and 4- The Nurturer, there is a relationship between cognitive problem solving orientation and the scores on problem solving discrimination indices. This hypothesis is accepted (X^2 (3, N = 21) = 7.86, p <.05) indicating there is a relationship between cognitive problem solving orientation and the scores on the problem solving indices for this group of subjects (See Table 2).

Hypothesis 2. Based on the proposed classifications, 1- The Executive, 2- Androgyny, 3- The Harmonizer, and 4- The Nurturer, there is a relationship between affective problem solving orientation and the scores on problem solving discrimination indices. This hypothesis is not rejected (X^2 (3, N = 21) = 1.81, p > .05) indicating there is not a relationship between affective problem solving orientation and the scores on the problem solving indices for this group of subjects (See Table 3).

Two posteriori analysis were made on the results of the significant Chi Square found on the cognitive dimension. A strength of association was completed using a contingency coefficient, C^2. A value of .27 was found for C^2. Although this value establishes some degree of association, comparisons cannot be made as there are no similar studies. Posteriorii comparisons were also made using Ryan's procedure. A X^2 Table = 6.97 (a = .05, a = 4, d -1 = 3) value was not established in any individual comparisons. Results are reported below in Table 4. Therefore, while there is an overall association between cognitive problem solving orientation and scores on the problem solving indices, there are no significant differences between individual classifications (Linton & Gallo, 1975). The inability to establish an overall

association may be due to the overlap of orientations (i.e., Androgyny and Executive both represent an independent cognitive orientation).

Table 3

Tabular Summary

Cognitive	H_0: Cognitive problem solving orientation is independent of scores on the PSOT II H_1: Cognitive problem solving orientation is dependent of scores on the PSOT II $\chi^2_\alpha (\alpha = .05, 3\ df) = 7.82$ H_0 was rejected with $\chi^2 = 7.86$
Affective	H_0: Affective problem solving orientation is independent of scores on the PSOT II H_1: Affective problem solving orientation is dependent of scores on the PSOT II $\chi^2_\alpha (\alpha = .05, 3\ df) = 7.82$ H_0 was not rejected with $\chi^2 = 1.80$

Table 4

Ryan's Procedure

	Androgeny 1.0	Executive .80	Harmonizer .33	Nurturer .20	d	$d-1$	χ^2_{Tabled}
Androgeny 1.0				3.75			
					4	3	6.97
Executive .80							
					3	2	6.25
Harmonizer .33							
					2	1	5.02
Nurturer .20							

Result of Secondary Analysis

While initial results did not bear out all of the original research questions, results of the secondary analysis include the following.

The most significant observations were in reference to the subjects selected as representative of category 3, the Harmonizer. Subjects were known only as assigned experimental numbers until it became time to contact certain subjects for the purpose of participating in phase 2. Of the six subjects predicted to function in category 3, three were international students, one was a member of minority race and the final two were first generation Americans. It was hypothesized that each experienced a home life in some way different from that of main stream America, and perhaps their orientation is reflective of a need to move between or adapt to the two environments. They displayed two behaviors of some interest. All immediately agreed to participate in phase two and kept their initial appointment. This was not true of any other category. Secondly, as a group they were most likely to ask that the question be repeated or clarified. This category seems to offer some tentative confirmation to the premise that problem solving orientation is a function of environment rather than gender.

Similar, less surprising, observations were made in the other categories. Category 1, the Executive, had the largest number of white male participants who were least likely to cooperate in participating in the phase 2. Category 4, The Nurturer, consisted of all female subjects. All of female participants over the age of 25 who were classifiable fell into this category. While subjects in this category were likely to agree to participate in phase 2, they were the most likely

not to keep their appointment and resist follow-up. Category 2, Androgyny showed no unique feature, consisting of both males and females demonstrating reasonable cooperation.

In a large number of cases, subjects who were predicted to function in an outer orientation in one or more contexts took longer to answer those questions. The meaning or main point of their answers did not always vary, but they did use a great deal more talking to explain. It was not uncommon for those who had been predicted to be inner oriented to answer in few words, such as "What I like." or "Whatever I want."

This study was proposed as seminal research addressing the apparent inconsistency in research in differentiations and gender voice. As this was a new direction there were no currently available objective instrumentation available. Two currently available instruments the GEFT (Witkin, Oltman, Raskin, & Karp, 1971) and the MBTI (Myers, 1962) were adapted for purposes of this study. One new instrument was developed, the PSOT II. There is some reason to believe that inadequacies in the instrumentation may have contributed to the research results. Concerns are particularly with the MBTI (Myers, 1962) and the PSOT II.

The MBTI was not originally proposed as a test of interpersonal orientation. While many of the subsequent descriptions of interpersonal style associated with the two code types, I_T_ and E_F_, are consistent with the dimension proposed in this study, there are some difficulties with adaptation of any instrument. Most problematic is the concern that subjects who score I_F_ or E_T_ could not be considered for this study . This significantly reduced the available pool for the second phase of the experiment.

The intent of this study was to evaluate a subjective process . The fluid process is of significantly more concern than the final result of any problem solving task. This offers a challenge to efforts to objectify the process for empirical analysis. Modifications made to the PSOT II in its development for this study represents a significant effort at objectification. Similar research studies in the past have chosen to use more subjective observational methods or case study approaches. The research which has attempted to empirically validate similar concepts of inner and outer voice have failed. This represents an ongoing dilemma in the field of psychology of how to transform subjective probabilities into objective quantifiable concepts.

While the observations are based on a small sample and not constructed as part of the original design they do lend some substantiation to the original proposal of four problem solving orientations. Viewed in combination with the concerns in regards to the instrumentation and research design, further study of this proposal is warranted.

Summary

A review of the results indicate findings that reflect that classification into problem solving categories, based on scores on the GEFT (Witkin, Oltman, Raskin and Karp, 1971) and scores on the problem solving indices, the PSOT II, are dependent. Results also indicate findings that reflect that classification into problem solving categories, based on scores on the MBTI (Myers, 1962), and scores on the problem solving indices, the PSOT II, are independent.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

Theoretical orientations which attempt to categorize or explain in a systematic way the nature of human beings' interactions with their environment as an expression of personality were reviewed in this study. The works of Witkin (Witkin, 1978; Witkin et. al., 1962; Witkin & Goodenough, 1977, 1981; Witkin et. al., 1979) and Jung (1921) in differentiation and type provided a framework. The recent work of Gilligan (1982) and Belenky, Clinchy, Goldberger and Tarule (1986) were reviewed as they emphasize the perspectives of women in developmental and epistimological research. In particular, the introduction of connected ways of learning and decision making have added a new dimension to the field.

Witkin's (Witkin, 1978; Witkin et. al., 1962; Witkin & Goodenough, 1977, 1981; Witkin et. al., 1979) work in differentiation proposes that individuals tend to function from one of two primary orientations, that of field independent or of field dependence. Field independence represents an orientation that is primarily dependent on internal referents and field dependence represents a contrasting style of dependence on external referents for problem solving. Their interpersonal style is assumed to follow in a manner consistent with their orientation.

Type, as proposed by Jung(1921), also accounts for a basic orientation which is either predominantly externally or internally oriented. This was described as an attitude of extroversion or introversion, respectively. Interpersonal style was not necessarily conceived of as dependent or defined by attitude. Rather individuals showed a preference for interpersonal or cognitive modes in a separate function, thinking versus feeling. While type was not proposed as an indicator of interpersonal style, the combination of attitude and this set of functions have given rise to detailed descriptions of inherent interpersonal styles (Myers & Myers 1980).

Gilligan (1982) in her challenge of historical research in developmental and epistimological psychology notes the absence of women from these studies and thus an absence of a model she calls connected thinking, or a logic which is attune to relatedness or interpersonal concerns. Her work was expanded by Belenky, Clinchy, Goldberger and Tarule (1986) who developed five developmental perspectives of how women value their own thoughts and feelings and those of others.

The strengths and limitations of these systems to explain problem solving orientations as a duality provide the genesis of the model proposed in this study which conceptualized problem solving orientations as an interaction of problem context and source of reference (See Figure 2 in Chapter 1, p. 8). Also significant to this proposed model is the concept that orientations are not related to gender, but are socialized.

The GEFT (Witkin, Oltman, Raskin, & Karp, 1971) was selected as a measure of cognitive internal or external orientation. A combination of I_T_ or E_F_ on the MBTI (Myers, 1962) were proposed as the most reasonable indicator of affective internal or external orientation, respectively. The PSOT II

was developed for purposes of this study. It was designed as an method to gather information on problem solving strategies and consideration. Subjects were given a series of situations felt to be reflective of cognitive and affective issues. Their subsequent responses were categorized as inner or outer in orientation.

An original sample of 198 subjects were given group administrations of the GEFT (Witkin, Oltman, Raskin, & Karp, 1971), the MBTI (Myers, 1962) and a biographical information sheet. Applying the scoring criteria established for this study, 21 subjects who could be expected to demonstrate problem solving orientations reflective of the four proposed categories, were identified. These subjects were asked and agreed to participate in phase two of the study which consisted of the individually, orally administered PSOT II.

A Chi Square analysis was used to evaluate the relationship of scores on the PSOT II and proposed problem solving orientation based on the model. Results of the first Chi Square rejected the null hypothesis (χ^2 (3, N = 21) = 7.86, p > .05) indicating there is a relationship between cognitive problem solving orientation and the scores on the problem solving indices for this group of subjects. Results of the second Chi Square did not reject the null hypothesis (χ^2 (3, N = 21) = 1.81, p > .05) indicating there is not a relationship between affective problem solving orientation and the scores on the problem solving indices for this group of subjects.

Conclusions

This study was undertaken to validate a new model of problem solving orientation which incorporates the contextual dimension. Problem solving is seen as an interaction of problem context and source of reference. This model challenges current theory in several ways. First, it challenges the concept that problem solving orientation is in some form a simple dichotomy and that a given individual will consistently function from the same orientation. Secondly, it challenges the view that affective problem solving orientation, is necessarily consistent with or determined by cognitive problem solving orientation. Thirdly, it challenges the position that the outer directed decision making style, which typifies connected or a feminine approach, is inherently inferior. And fourth, that problem solving orientation is in some way gender bound and therefore not changeable or modifiable. These premises are significant when considering the concept of Androgyny and its characteristics of flexibility and adaptiveness as a more effective way of living.

The following conclusions are indicated within the limits and findings of this study:

1. Subjects in the categories of the Executive and Androgyny were more likely to be classified as inner-oriented on the problem solving indices involving cognitive items. Subjects in the categories the Harmonizer and The Nurturer were more likely to be classified as outer oriented on the problem solving indices involving cognitive items.

2. Results of the study do not substantiate a relationship between affective problem solving orientation and the scores on problem solving

discrimination indices. Subjects in the proposed classifications, Executive, Androgyny, Harmonizer, and Nurturer, did not score consistently differently on the affective items of the problem solving indices

Empirical results of this study begin to substantiate the proposed model that problem solving orientation is an interaction of problem content and source of reference. A relationship between the classifications and problem solving orientation for the cognitive domain were confirmed by the study. Results were not conclusive for the affective domain, although many subjects did respond in a mixed manner similar to the original proposal. Possibly, affective items could not contain the emotional/interpersonal intensity during the testing situation that they might have in real life. The cognitive issues, which are, by definition, less contingent on emotion, may have been more conducive to the testing situation.

While the complete model could not be substantiate by the current study, information related to the dynamics and assessment of problem solving orientation was gained. Particularly, issues related to the inclusion of the affective domain as an independent area were identified.

Recommendations

The following recommendations are presented, based upon the results of this study:

1. It is recommended that further information gathering studies, using a case study approach, should be initiated. These studies could serve as the basis for the development of more objective instrumentation . Suggested areas

for information gathering are family of origin and attitudes toward competency and the establishment of life goals.

2. The development of objective instrumentation for both classifying the affective dimension and to assess affective problem solving process is recommended.

3. As noted above, use of only two scale combinations on the MBTI contributed significantly to the small numbers in phase two of the study. It is recommended that further research with a larger sample be initiated. A larger sample may identify a more significant difference even with the current instrumentation.

4. If the problem solving orientations can be substantiated, research into possible environmental influences should be initiate. Post hoc observations seem to indicate a relationship between environment and problem solving classification. Older female subjects and male subjects were more likely to fall into a classification consistent with stereotypical expectations. Subjects classified as Harmonizers seem to share a common, yet different from the main stream, feature in regards to the family of origin.

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APPENDIXES

APPENDIX A

MYERS BRIGGS TYPE CHART

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These consist of pages:

69

U·M·I

Characteristics frequently associated with each type

	Sensing Types		Intuitive Types	

<table>
<tr><th colspan="2" align="center">Sensing Types</th><th colspan="2" align="center">Intuitive Types</th></tr>
<tr>
<td>ISTJ

Serious, quiet, earn success by concentration and thoroughness. Practical, orderly, matter-of-fact, logical, realistic, and dependable. Take responsibility. Make up their own minds as to what should be accomplished and work toward it steadily, regardless of protests or distractions.</td>
<td>ISFJ

Quiet, friendly, responsible, and conscientious. Work devotedly to meet their obligations. Lend stability to any project or group. Thorough, painstaking, accurate. Their interests are usually not technical. Can be patient with necessary details. Loyal, considerate, perceptive, concerned with how other people feel.</td>
<td>INFJ

Succeed by perseverance, originality, and desire to do whatever is needed or wanted. Put their best efforts into their work. Quietly forceful, conscientious, concerned for others. Respected for their firm principles. Likely to be honored and followed for their clear convictions as to how best to serve the common good.</td>
<td>INTJ

Usually have original minds and great drive for their own ideas and purposes. In fields that appeal to them, they have a fine power to organize a job and carry it through with or without help. Skeptical, critical, independent, determined, sometimes stubborn. Must learn to yield less important points in order to win the most important.</td>
</tr>
<tr>
<td>ISTP

Cool onlookers—quiet, reserved, observing and analyzing life with detached curiosity and unexpected flashes of original humor. Usually interested in cause and effect, how and why mechanical things work, and in organizing facts using logical principles.</td>
<td>ISFP

Retiring, quietly friendly, sensitive, kind, modest about their abilities. Shun disagreements, do not force their opinions or values on others. Usually do not care to lead but are often loyal followers. Often relaxed about getting things done, because they enjoy the present moment and do not want to spoil it by undue haste or exertion.</td>
<td>INFP

Full of enthusiasms and loyalties, but seldom talk of these until they know you well. Care about learning, ideas, language, and independent projects of their own. Tend to undertake too much, then somehow get it done. Friendly, but often too absorbed in what they are doing to be sociable. Little concerned with possessions or physical surroundings.</td>
<td>INTP

Quiet and reserved. Especially enjoy theoretical or scientific pursuits. Like solving problems with logic and analysis. Usually interested mainly in ideas, with little liking for parties or small talk. Tend to have sharply defined interests. Need careers where some strong interest can be used and useful.</td>
</tr>
<tr>
<td>ESTP

Good at on-the-spot problem solving. Do not worry, enjoy whatever comes along. Tend to like mechanical things and sports, with friends on the side. Adaptable, tolerant, generally conservative in values. Dislike long explanations. Are best with real things that can be worked, handled, taken apart, or put together.</td>
<td>ESFP

Outgoing, easygoing, accepting, friendly, enjoy everything and make things more fun for others by their enjoyment. Like sports and making things happen. Know what's going on and join in eagerly. Find remembering facts easier than mastering theories. Are best in situations that need sound common sense and practical ability with people as well as with things.</td>
<td>ENFP

Warmly enthusiastic, high-spirited, ingenious, imaginative. Able to do almost anything that interests them. Quick with a solution for any difficulty and ready to help anyone with a problem. Often rely on their ability to improvise instead of preparing in advance. Can usually find compelling reasons for whatever they want.</td>
<td>ENTP

Quick, ingenious, good at many things. Stimulating company, alert and outspoken. May argue for fun on either side of a question. Resourceful in solving new and challenging problems, but may neglect routine assignments. Apt to turn to one new interest after another. Skillful in finding logical reasons for what they want.</td>
</tr>
<tr>
<td>ESTJ

Practical, realistic, matter-of-fact, with a natural head for business or mechanics. Not interested in subjects they see no use for, but can apply themselves when necessary. Like to organize and run activities. May make good administrators, especially if they remember to consider others' feelings and points of view.</td>
<td>ESFJ

Warm-hearted, talkative, popular, conscientious, born cooperators, active committee members. Need harmony and may be good at creating it. Always doing something nice for someone. Work best with encouragement and praise. Main interest is in things that directly and visibly affect people's lives.</td>
<td>ENFJ

Responsive and responsible. Generally feel real concern for what others think or want, and try to handle things with due regard for the other person's feelings. Can present a proposal or lead a group discussion with ease and tact. Sociable, popular, sympathetic. Responsive to praise and criticism.</td>
<td>ENTJ

Hearty, frank, decisive, leaders in activities. Usually good in anything that requires reasoning and intelligent talk, such as public speaking. Are usually well informed and enjoy adding to their fund of knowledge. May sometimes appear more positive and confident than their experience in an area warrants.</td>
</tr>
</table>

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APPENDIX B

PROBLEM SOLVING ORIENTATION TEST II

Questions for the PSOT II

You want to buy a new car. How do you start the process? What information would you need? How would you gather it?

You have an invitation to spend an afternoon with friends or with family. How would you decide?

You have been offered a new job? What information do you need? How would you decide?

A very close friend really wants you to participate in an activity with them, but you would rather not. It would take some time. How do you decide?

A good new job opportunity would require a move? What factors influence your decision? How would you decide?

Your job in a social/work group is to organize a party. How do you decide what type of party, location, food, etc.?

You are going to a party with an unfamiliar group. How do you decide what to wear? What do you need to know?

It is your job to rearrange the work space for your work group (about 10 people). What factors do you consider? How do you decide?

You have been selected to go and get a movie for a group to watch. The group never reached agreement on a selection. How do you decide what movie?

You are trying on a coat that is a color and style that everyone says you look great in, but you are not so sure? The price is very good. How do you decide?

APPENDIX C

BIOGRAPHICAL INFORMATION SHEET

Name _____

Classification _____ Age _____

Sex _____

Group _____

Please respond to the question on the back of this sheet.

When you finish return all of the test materials to the envelope and turn your envelope

in to the examiner.

Thank you for your help!

From the following list ,select those qualities you parents enouraged you to have or express as a child. Select as many as you feel apply.

_____	Not very aggressive	_____	Very independent
_____	To show emotions	_____	Almost always hide emotions
_____	Subjective	_____	Very objective
_____	Submissive	_____	Dominate
_____	Passive	_____	Active
_____	Not competitive	_____	Competitive
_____	Home-oriented	_____	Worldy
_____	Indirect	_____	Direct
_____	Not adventurous	_____	Adventurous
_____	Defer decisions	_____	Make decisions
_____	Humble	_____	Very self-confident
_____	Not to use harsh language	_____	Harsh language was OK
_____	Tactful	_____	Blunt
_____	Gentle	_____	Rough
_____	Very aware of other's feelings	_____	Not at all aware of others feelings
_____	Quiet	_____	Loud
_____	Neat	_____	Sloppy
_____	Very strong need for security	_____	Very little need for security
_____	To enjoy art and literature	_____	Art and literature not emphsized
_____	Express tender feelings	_____	Not express tender feelings

VITA

Holly Montgomery Rose

Candidate for the Degree of

Doctorate of Philosophy

Thesis :   PROBLEM SOLVING ORIENTATION: AN INTERACTION OF PROBLEM CONTEXT AND SOURCE OF REFERENCE

Major Field: Applied Behavioral Studies in Education
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Biographical:

Personal Data: Born in Purcell, Oklahoma, June 21, 1956, the daughter of Henry H. and Jayne N. Montgomery

Education: Graduated from Purcell Senior High School, Purcell, Oklahoma, in May 1974; received a Bachelor of Science Degree in Speech Education from Oklahoma State University in Stillwater, Oklahoma in December of 1977; Received a Masters of Science in School Psychology from the University of Central Arkansas in Conway, Arkansas in May of 1981; completed the requirements for the Doctorate of Philosophy degree at Oklahoma State University in July, 1988.

Professional Experience: Program Coordinator, Office of the Provost, University of Tulsa, June 1985 to present; Residence Director, University of Tulsa, June 1983 to June 1985; Counselor/ Retention Coordinator, University of Central Arkansas, June 1981 to June 1983; Psychological Intern, Central Arkansas Mental Health Services, January, 1981 to June, 1981; Graduate Assistant, University Counseling Center, University of Central Arkansas, Conway, Arkansas, August 1979 to January, 1981.